



ADAMS COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

Prepared with the assistance of the North Central Wisconsin Regional Planning Commission



ADAMS COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

prepared for:

Adams County Emergency Management

by:

North Central Wisconsin Regional Planning Commission

adopted by Adams County Board on:

August 18, 2020

This update was prepared at the request and under the supervision of the Adams County Public Safety and Judiciary Committee and its Emergency Management Director by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION
210 McCLELLAN STREET, SUITE 210
WAUSAU, WI 54403



Telephone: 715-849-5510

FAX: 715-849-5110

email: staff@ncwrpc.org

www.ncwrpc.org

TABLE OF CONTENTS

Part I – Update Planning Process

Introduction.....	1-1
Disaster Mitigation Act of 2000	1-1
Five Parts of an All Hazards Mitigation Plan Update	1-2
Development of an All Hazards Mitigation Plan Update	1-2
Key Elements of the Update to the 2015 Plan	1-2
All Hazards Mitigation Plan Update Taskforce.....	1-3
Local Government Involvement.....	1-3
Neighboring Community Involvement.....	1-5
Local and Regional Agency Involvement.....	1-5
Public Review Process and Update Adoption	1-6
Incorporated Plans, Studies, Reports and Technical Data	1-7
Contact Information	1-8

Part II – Planning Area

Introduction.....	2-1
General Geography	2-1
Location	2-1
Civil Divisions.....	2-1
Topography.....	2-4
Climate.....	2-4
Demographic and Economic Profile	2-5
Population and Households	2-5
Seasonal Population.....	2-6
Employment.....	2-8
Economic Impact of Job Loss in Adams County.....	2-9
Land Use/Land Cover and Development Patterns	2-9
Forestry and Agriculture.....	2-10
Residential Development.....	2-10
Commercial and Industrial Development	2-12
Surface Water	2-12
Floodplain	2-13
Wetlands.....	2-17
Other Land Cover /Uses.....	2-17
Future Growth and Development in Adams County	2-18
Public Facilities and Services	2-19
Transportation.....	2-19
Utilities	2-20
Emergency Services and Facilities	2-23
Critical Community Facilities.....	2-25
Inventory & Value of Structures / Property in Adams County	2-27

Part III – Risk Assessment

Introduction.....	3-1
Hazard Identification.....	3-1
Hazard Analysis.....	3-2
Tornados	3-4
Winter Storms/Extreme Cold	3-11
Flooding/Dam Failure	3-16
<i>Special Report: Flooding Status Report 2016-2019</i>	3-25
Wildfire	3-30
Drought/Extreme Heat.....	3-33
Severe Thunderstorms/High Wind/Hail/Lightning	3-38
Hazardous Materials Incidents	3-41

Part IV – Mitigation Strategy

Introduction.....	4-1
Progress Report 2015 - 2019	4-1
Local Hazard Mitigation Goals.....	4-5
Prioritization of Strategies.....	4-6
Mitigation Action Plan	4-7

Part V – Plan Maintenance Procedures

Introduction.....	5-1
Plan Update Adoption.....	5-1
Plan Implementation.....	5-1
Plan Update Evaluation and Maintenance.....	5-4

Tables

Table 1 – Geographical Size by Civil Division	2-2
Table 2 – Population of Adjacent Counties	2-5
Table 3 – Population and Households of Minor Civil Divisions.....	2-6
Table 4 – Estimated Seasonal Population.....	2-7
Table 5 – Top Employers in Adams County	2-8
Table 6 – Economic Impact of Catastrophic Event on Major Industrial Sectors	2-9
Table 7 – Generalized Land Use	2-10
Table 8 – FEMA Community Status Book Report	2-14
Table 9 – Equalized Value by Municipality	2-27
Table 10 – Value of County Owned Properties	2-28
Table 11 – Value of City Owned Properties	2-28
Table 12 – Value of Village Owned Properties.....	2-29
Table 13 – Value of Town Owned Properties.....	2-29
Table 14 – Tornado Wind and Damage Scale	3-4
Table 15 – Reported Tornados in Adams County	3-6
Table 16 – Probability of Intensity for Given Tornado in Adams County	3-11

Table 17 – Dams in Adams County	3-18
Table 18 – Improvement Values of Structures in Floodplains	3-24
Table 19 – Number of Trucks Carrying Hazardous Materials	3-44
Table 20 – Top Hazardous Commodities Carried on Rail	3-44
Table 21 – Bench Mark for Progress 2015 - 2019 Plan	4-2
Table 22 – Summary of Mitigation Strategies	4-8

Maps

Map 1 – Location Map	2-3
Map 2 – Generalized Land Use	2-11
Map 3 – Surface Water & Watersheds	2-15
Map 4 – Floodplains & Dams	2-16
Map 5 – Transportation	2-21
Map 6 – Utilities	2-22
Map 7 – Critical Community Facilities	2-26
Map 8 – Tornado Vulnerability	3-9
Map 9 – Flood Vulnerability	3-28
Map 10 – Flood Damage	3-29
Map 11 – Wildfire Risk	3-33

Appendices

Appendix A – Meeting Notices	A-1
Appendix B – Resolutions of Plan Adoption	B-1
Appendix C – EMSI Job Loss Analysis	C-1

Introduction

Part I of the Adams County All Hazards Mitigation Plan (AHMP) Update describes and documents the process used to develop the plan update. This includes how it was prepared and who (committee, organizations, departments, staff, consultants, etc.) was involved in the update process. It also describes the local government involvement, the time period in which the update was prepared, and who to contact to answer questions and make recommendations for future amendments to the plan.

Disaster Mitigation Act of 2000

The development of the Adams County All Hazards Mitigation Plan Update is a response to the passage of the Disaster Mitigation Act of 2000 (DMA2K). On October 30, 2000, DMA2K was signed into law by the U.S. Congress in an attempt to stem the losses from disasters, reduce future public and private expenditures, and to speed up response and recovery from disasters. This Act (Public Law 106-390) amended the Robert T. Stafford Relief and Emergency Assistance Act. The following is a summary of the parts of DMA2K that pertain to local governments and tribal organizations:

- The Act establishes a requirement for local governments and tribal organizations to prepare an All Hazards Mitigation Plan in order to be eligible for funding from FEMA through the Pre-Disaster Mitigation Assistance Program and Hazard Mitigation Grant Program.
- The Act establishes a requirement that natural hazards such as tornados, floods and wildfires need to be addressed in the risk assessment and vulnerability analysis parts of the All Hazards Mitigation Plan. Manmade types such as hazardous waste spills are encouraged but not required to be addressed.
- The Act authorizes up to seven percent of Hazard Mitigation Grant Program funds available to a state after a federal disaster to be used for development of state, local, and tribal organization All Hazards Mitigation Plans.
- The Act establishes November 1, 2004 as the date by which local governments and tribal organizations are to prepare and adopt their respective plans in order to be eligible for the FEMA's Hazard Mitigation Grant Program and Pre-Disaster Mitigation Program.
- If a plan is not prepared by November 1, 2004, and a major disaster is declared, in order for a local government or tribal organization to be eligible to receive funding through the Hazard Mitigation Grant Program, they must agree to prepare an All Hazards Mitigation Plan within one year.

- In addition, by not having an All Hazard Mitigation Plan, local governments and tribal organizations cannot utilize funding through the Pre-Disaster Mitigation Grant Program.
- All Hazard Mitigation Plans must be updated every five years.

The Five Parts of an All Hazards Mitigation Plan Update

The Adams County All Hazards Mitigation Plan Update was categorized into five parts in order to address FEMA's local mitigation plan requirements. The five parts are as followed:

- ✓ Part I: Update Planning Process
- ✓ Part II: Planning Area
- ✓ Part III: Risk Assessment
- ✓ Part IV: Mitigation Strategy
- ✓ Part V: Plan Maintenance Process and Adoption

Development of the All Hazards Mitigation Plan Update

The Adams County Emergency Management Department received a Planning Grant in 2018 to update its All Hazards Mitigation Plan through the Pre-Disaster Mitigation (PDM) Grant Program.

In late 2018, the North Central Wisconsin Regional Planning Commission (NCWRPC) finalized a work agreement with Adams County and began preparation of the All Hazards Mitigation Plan Update at the request of the County Emergency Management Director in January of 2019.

The update process included Task Force committee meetings as well as extensive involvement from the local units of government within Adams County and the counties surrounding Adams. A variety of local and regional agencies were involved in the development of the plan update at various stages, and extensive opportunity for public participation was provided including public informational meetings. All sections of the plan update report were reviewed and analyzed by the planning team at subsequent meetings and revised as established in the design of the update process for this Plan.

The remainder of this chapter expands on and provides more detail on key aspects of the update development process.

Key Elements Of The Update To The 2015 Plan

The major enhancements to the Adams County All Hazards Mitigation Plan developed through this update are as follows:

- ✓ Review of Recommended Revisions - The final Crosswalk for the previous plan approval passed the plan with no recommended revisions.
- ✓ Review and update of planning area chapter - The planning area description and inventory was improved with additional information and updated statistics.
- ✓ Review and update of risk assessment - The risk assessment was updated with documentation on recent hazard events, including a new areas affected by flooding map. The priority level of hazards facing the County was also reviewed and updated.
- ✓ High Hazard Dams - High hazard potential dams were specifically addressed in the risk assessment, as well as other areas of the Plan Update.
- ✓ Review and update of Mitigation Strategy - The mitigation strategies chapter begins with a complete progress report on the strategies from the 2015 plan, establishment of new set of strategies for next five-year cycle and an updated prioritization of projects.
- ✓ Concept of Community Resiliency is introduced into the Plan, see Chapter 5.

All Hazards Mitigation Plan Update Taskforce

The Adams County All Hazard Mitigation Plan Update was prepared under the guidance of an advisory taskforce that consisted of the current members of the County Public Safety and Judiciary Committee. Periodic meetings were held with the NCWRPC staff, the County Emergency Management Director (Jane Gervais), and the Task Force to provide input on the types of hazards to be considered, appropriate mitigation strategies, and to review draft reports. Task Force members are as follows:

- ❖ Robert Grabarski, Chair
- ❖ Jack Allen
- ❖ Ken Bork
- ❖ Pete Hickethier
- ❖ Rick Pease

Local Government Involvement

There were a number of opportunities for the local units of government to become involved in the update process. All jurisdictions participated in the

original plan as well as subsequent updates, including this one, through one or more of these opportunities.

In April of 2019 a hazard mitigation issues survey was sent to each town chairperson and clerk requesting which hazards are a concern, input on past and future mitigation measures, and to document other information that could be incorporated into the All Hazards Mitigation Plan Update. Responses were received from 5 of 17 towns. A significant amount of information was gleaned from these questionnaires and incorporated into the planning document.

The City of Adams was formally introduced to the update process at a separate meeting on July 15, 2019. The participants at this meeting provided information on hazards that have significance to the City, discussed critical facilities and provided mitigation strategy ideas for the plan update. Participants in this meeting included the following:

- ❖ Roberta Pantaleo Mayor, City of Adams
- ❖ Scott Schlei City of Adams Police Department
- ❖ Bob Berry City of Adams Public Works Department
- ❖ Janet Winters Clerk-Treasurer, City of Adams
- ❖ Cindy Scott City Council
- ❖ Julie Goodhue City Council
- ❖ Dawn Hanson City Council
- ❖ Janet Waite City Council
- ❖ Matt Robinson City Council
- ❖ Jane Gervais Adams County Emergency Management
- ❖ Darryl Landeau NCWRPC Planner

Discussion from this meeting indicated that the City's main concerns are tornados/high winds and major snow/ice storms due to power outage threat and lack of back-up generators. The City would like back-up generators for its Public Works, Fire Department and City Hall facilities, as well as a remodel of City Hall to function as a shelter. Hazardous materials are also a concern. The City has an aging warning siren in need of replacement. Emergency communications are a problem in the area with issues concerning reliable telephone and cell service.

The Village of Friendship was formally introduced to the update process at a separate meeting on July 1, 2019. The participants at this meeting provided information on hazards that have significance to the area, discussed critical facilities and provided mitigation strategy ideas for the plan update. Participants in this meeting included the following:

- ❖ Ron Doyle Village President, Village of Friendship
- ❖ Ernest Klicko Village Board
- ❖ Tony Sindelar Village Board
- ❖ John Jones Village Board

❖ Lee Parlow	Village Board
❖ Jason Piere	Village Board
❖ Bob Kierstyn	Village of Friendship Public Works Department
❖ Macy Kuhnke	Deputy Clerk, Village of Friendship
❖ Jane Gervais	Adams County Emergency Management
❖ Darryl Landeau	NCWRPC Planner

Discussion from this meeting indicated that the Village's main concerns are tornados, dam failure and hazardous materials trucking, rail and local storage. The Village is vulnerable to sewer back up with power failure at the lift stations, and they can currently have water storage capacity to supply drinking water and fire fighting for 3-days without power. Long-term power outage is a concern due to lack of generator capacity for sheltering, particularly in cold conditions. The Village warning siren is in need of significant maintenance and repairs

Neighboring Community Involvement

One of the requirements of the update process was to include neighboring communities. In previous plans, the NCWRPC experienced low attendance in response to invitations to county emergency management staff from surrounding counties. As a result, NCWRPC staff e-conferenced during the update process with staff from Columbia, Juneau, Marquette, Portage, Waushara and Wood counties. Ideas were exchanged about All Hazards Mitigation planning processes and strategies between the various counties.

Local and Regional Agency Involvement

Another requirement of the update process was to involve local and regional agencies that have a role in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-private interests. To meet this objective, the NCWRPC invited a diverse group of stakeholders to discuss potential hazard mitigation strategies.

The meeting was held on July 8, 2019 at the Adams County Courthouse in Friendship. Agencies and organizations represented include the following:

❖ Brady Backes	WI Dept of Natural Resources
❖ Jane Gervais	Adams County Emergency Management
❖ Jon Gessner	Adams Columbia Electric Cooperative
❖ Leah Eckstein	Adams County Health and Human Services
❖ Kirk Gribble	Alliant Energy
❖ Patrick Pare	Adams County Highway Dept.
❖ Josh Sanders	Enbridge Inc.
❖ Darryl Landeau	North Central WI Regional Planning Commission
❖ David Johnson	Adams County Highway Dept.

- ❖ David Carlson Adams County Sheriff's Office
- ❖ Pat Kotlowski Adams County Highway Dept.

A number of other agencies were invited but chose not to attend.

During the meeting, the Plan Update and its components were introduced to the attendees. Mitigation strategy ideas were solicited and a number of ideas were discussed at length with the group. Part IV of the Plan was revised based on the meeting.

During the meeting a number of issues were discussed. Meeting attendees brought up issues related to flooding and public health with well contamination; long-term power outage with no generator capacity to run many critical facilities as well as maintaining running water and food safety; and evacuation in terms of special needs individuals as well as keeping roads clear. The Emergency Zone Atlas was brought up as an important tool here, both in general and in terms of Adams County being a particular fire risk area.

Public Review Process and Update Adoption

Opportunities for public comment were provided to review the Plan Update during the drafting stage and prior to Plan Update approval. See APPENDIX A for copies of public meeting notices. Draft Plan elements were made available on the Internet during the update process. Links that open an email submission were provided for questions or comments. The final Plan document will remain on the Internet until the next draft update is posted for review. The public can continue to submit questions or comments at any time via the email link. (See Contact Information, below, for web addresses.)

County Public Safety & Judiciary Committee meetings are always open to the public (unless entering into legal closed session), and the public can bring questions or comments regarding this Plan Update to any regular meeting. Meeting schedules can be obtained by checking the County website, contacting the County Clerk's Office or the Emergency Management Director (see Contact Information, below).

A public informational meeting on the draft update was held at the Adams County Courthouse on July 1, 2019. Notice was published in the local newspaper, however, no one from the public attended, and thus no public comments were received. In addition, no written comments were submitted.

The County Public Safety & Judiciary Committee will review the Plan Update prior to forwarding it to County Board for approval. Following these open, public meetings, the Update will be forwarded to the County Board for final adoption. The adopting resolution will be included in APPENDIX B along with details on any plan changes resulting from Committee and/or County Board action.

The City and Village were asked to adopt the Plan Update for their jurisdictions at their own properly posted and open public meeting, see APPENDIX B for the local units' resolutions of adoption.

Incorporated Plans, Studies, Reports And Technical Data

Many plans, reports, and technical data sources were referenced and incorporated into the Adams County All Hazards Mitigation Plan Update. These sources include but are not necessarily limited to the following:

Wisconsin Department of Natural Resources, North Central Wisconsin Regional Planning Commission and Adams County geographic information system databases provided much of the base data for the mapping and analysis within the Plan Update. Statistical reports and data from the US Census and Wisconsin Departments of Administration, Revenue and Workforce Development were used for the demographic background in Part 2 of this Plan Update. Land use data in Part 2 was obtained from the Adams County Comprehensive Plan.

Wisconsin Department of Natural Resources Wetlands Inventory and Dams Database were used to identify and map wetlands and dams within the County in Parts 2 and 3. The WisDNR Dams Database provided information on high hazard potential dams within the County. FEMA DFIRM flood zone maps for Adams County provided the mapping of 100-year floodplain areas for flooding risk assessment in Part 3.

NOAA National Climatic Data Center severe weather event data was used extensively for the risk assessment in Part 3. The wildfire section of the risk assessment was based on the Wisconsin Department of Natural Resources' fire occurrence database and statewide Communities At Risk (CAR) assessment.

A variety of other plans and studies were instrumental in developing the risk assessment in Part 3, including: the Community Wildfire Protection Plans for the Towns of Rome and Big Flats, the Flood Insurance Study...for Adams County and Incorporated Areas, and the Hazardous Materials Commodity Flow Study for Adams County.

Other plans, reports, and documents were reviewed by staff during the planning process including but not limited to the State of Wisconsin Hazard Mitigation Plan; the Hazard Analysis for the State of Wisconsin, the Wisconsin Repetitive Loss Report, the Adams County Zoning Ordinance, the Adams County Land and Water Resource Management Plan, and the Adams County Emergency Operations Plan. Although these may not have been directly incorporated, the review provided valuable insight and direction to the planning process.

Contact Information

Jane Gervais, Director
Adams County Emergency Management
Adams County Courthouse
400 Main Street
Friendship, WI 53934

608-339-4248
emmgmt@co.adams.wi.us

Go to: **www.ncwrpc.org/adams/adamshzdplan/index.html**
www.co.adams.wi.us/departments/emergency-management

INTRODUCTION

Part 2 of the Adams County All-Hazard Mitigation Plan Update provides general geographical information on Adams County including demographic and economic characteristics. The general development patterns of the County are described in terms of current land use and future development trends.

In addition to developing an understanding of the planning area, this chapter represents the beginning stages of assessing vulnerability by inventorying the numbers, types and values of existing buildings, infrastructure and critical facilities within each participating jurisdiction in the planning area. This overall summary of each jurisdiction's vulnerability to hazards describes the potential impact on the community.

Land use and development trends are analyzed to project the number and type of potential future buildings, infrastructure and critical facilities within each jurisdiction so that mitigation options can be considered in future land use decisions.

The resulting information is an important element of the update process, since sound alternative mitigation strategies cannot be formulated and evaluated without an in-depth knowledge of the relevant conditions in the study area.

GENERAL GEOGRAPHY

LOCATION

Adams County is located in central Wisconsin (See Map 1). The largest urban areas are the City of Adams and the Village of Friendship, which border each other and are located in the center of the County. The City of Wisconsin Dells is encroaching from the south into the southwest corner of the County but is covered under Columbia County's mitigation plan. The County is bounded on the north by Portage and Wood Counties, on the east by Marquette and Waushara, on the south by Columbia, and on the west by Juneau County.

Adams County lies 150 miles northwest of Milwaukee; 116 miles southwest of Green Bay; 87 miles east of La Crosse and 78 miles north of Madison. Major metropolitan areas outside of Wisconsin with transportation linkages to Adams County are Chicago, 219 miles southeast; Minneapolis-St. Paul, 202 miles northwest; and Duluth, 294 miles north.

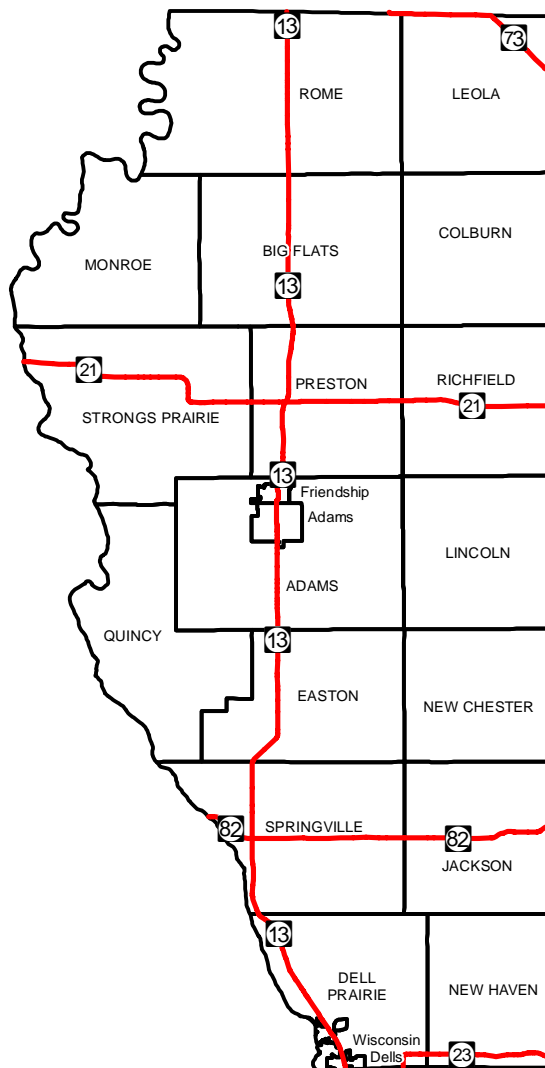
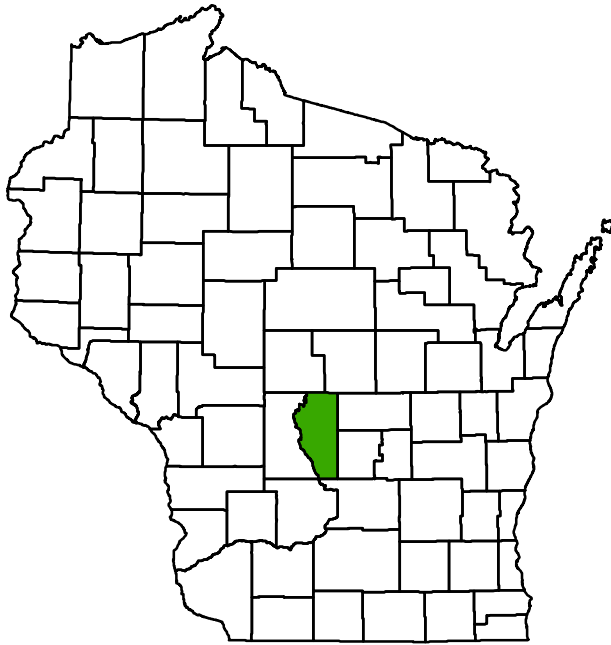
CIVIL DIVISIONS

There are 20 municipalities (17 towns, 1 village, and 2 cities) in the Adams County planning area. The Village of Friendship is the County Seat. These units of government provide the basic structure of the decision-making framework. Although not general-purpose units of governments, there are also 9 lake and/or sanitary districts. The County has a total surface area of 688 square miles, of which 6.2 % is water. The area and proportion of the County within each civil division is presented in Table 1. The



County rectified some ambiguity in its boundaries with Juneau County due to the river and flowages between them which may explain some variation in comparing data sets on land area.

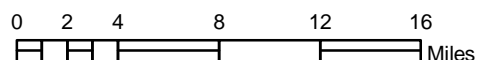
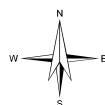
Table 1 Geographical Size by Civil Division				
	Area in square miles			
Municipality	Water area	Land area	Total area	Area as % of County
Adams city	0	2.94	2.94	0.43%
Adams town	0.31	50.09	50.4	7.33%
Big Flats town	0.16	47.89	48.05	6.98%
Colburn town	0.01	35.86	35.87	5.21%
Dell Prairie town	1.19	31.52	32.71	4.75%
Easton town	0.09	36.02	36.11	5.25%
Friendship village	0.04	0.90	0.94	0.14%
Jackson town	1.00	34.64	35.64	5.18%
Leola town	0.03	37.22	37.25	5.41%
Lincoln town	0.05	36.05	36.1	5.25%
Monroe town	16.56	21.87	38.43	5.59%
New Chester town	0.26	31.09	31.35	4.56%
New Haven town	1.25	29.12	30.37	4.41%
Preston town	0.49	35.33	35.82	5.21%
Quincy town	7.02	32.54	39.56	5.79%
Richfield town	0.01	35.54	35.55	5.17%
Rome town	8.11	54.11	62.22	9.04%
Springville town	0.97	43.71	44.68	6.49%
Strongs Prairie town	4.69	47.27	51.96	7.55%
Wisconsin Dells (part)	0.06	1.72	1.78	0.26%
Adams County	42.30	645.43	687.73	100.00%

Source: NCWRPC, 2019



Legend

-  Minor Civil Divisions
-  State Highways



Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



Prepared By:
**North Central
 Wisconsin Regional
 Planning Commission**

210 McClellan St., Suite 210, Wausau, WI 54403
 715-849-5510 staff@ncwrpc.org - www.ncwrpc.org

TOPOGRAPHY

Adams County is in the Wisconsin Central Plain, which is characterized by flat or gently undulating topography. Relief is generally low, and the county has extensive wetlands of various types. There are also occasional pinnacles and hills of sandstone such as Pilot Knob, Rabbit Mound, Friendship Mound and Roche-A-Cri Mound.

Roche-A-Cri Mound rises 300 feet above the surrounding plain to an elevation of 1,185 feet. Elevations along the Wisconsin River range from 850 feet in the southern part of the County to 950 feet in the northern part. The altitude of the outwash plain ranges from 1,000 to 1,100 feet.

The Johnstown moraine in southeastern Adams County divides the drainage between the Wisconsin and Fox Rivers. The principal drainage in Adams County is westward to the Wisconsin River. Little Roche-A-Cri Creek, Big Roche-A-Cri Creek and Fourteen Mile Creek are the major tributaries. Drainage east of the moraine is to the Fox River via Neenah Creek, Widow Green Creek, and other tributaries.

Streams in Adams County begin in outwash plains, which provide relatively large and constant amounts of ground water. Average regional runoff is about 9 inches per year. The Wisconsin River is regulated by dams and has a relatively constant flow. Floodplains in Adams County are small, and floods occur only during periods of exceptionally heavy rainfall.

CLIMATE

Adams County has a continental climate that is characterized by long, cold, snowy winters; warm summers; and springs and falls that are often short. From late fall through spring, the weather changes every few days because of air masses that are part of pressure systems moving eastward and northeastward over the northern states.

In winter, the average temperature is 18 degrees F., and the average daily minimum temperature is 8 degrees. The lowest temperature on record is -43 degrees, which occurred in 1951. The number of days at or below 0 degrees has varied from 9 in 1931 to 57 in 2008. In summer, the average temperature is 69 degrees and the average daily temperature is 82 degrees. The highest recorded temperature is 114 degrees, which occurred in 1936. The number of days at or above 90 degrees has varied from 1 in 1951 to 53 in 1931.

Average total annual precipitation is 34.14 inches. Of this, about 70% usually falls in April through September. The heaviest 1-day rainfall on record was 7.67 inches on August 7, 1980. Thunderstorms occur on about 39 days each year. Hail falls on an average of two days a year. Average seasonal snowfall is 39.8 inches, with 97.4 inches (2007-8) being the greatest total on record.

DEMOGRAPHIC AND ECONOMIC PROFILE

POPULATION AND HOUSEHOLDS

The official state 2019 population estimate for Adams County shows a population of 20,630 people for the County. This is actually a slight decline from the 2010 Census reported population of 20,875 people. Since 2010, the population of Adams County has decreased by 1.2% or by 245 people. Historically, Adams County had been among the fastest growing counties in the state going back to 1990, outpacing its neighbors, and only more recently being matched and surpassed (refer to Table 2). If the 20-year growth trend continues, there will be approximately 21,002 people in Adams County in 2029, and 21,374 people in 2038.

Population concentrations and trends are important when prioritizing hazard mitigation strategies. Adams/Friendship is one of the most densely populated and developed areas in the County. Other areas of population concentrations are around Lakes Camelot, Sherwood, and Arrowhead in the Town of Rome; along Castle Rock Lake in the Town of Quincy; and the communities of Dellwood, Easton, Brooks, Grand Marsh, and Big Flats. Map 2 (below) shows areas of residential population concentrations in the County. Overall population density of the County is about 30.28 persons-per-square-mile and ranges from a high of approximately 736 in the Village of Friendship to a low of about 4.4 in the Town of Richfield.

TABLE 2 Population of Adjacent Counties				
County	2000	2019	# Change	% Change
Adams	19,920	20,630	710	3.6%
Columbia	52,468	57,282	4,814	9.2%
Juneau	24,316	27,232	2,916	12.0%
Marquette	14,555	15,390	835	5.7%
Portage	67,182	71,680	4,498	6.7%
Waushara	23,066	24,517	1,451	6.3%
Wood	75,555	75,450	701	-0.14%
Wisconsin	5,363,675	5,843,443	479,768	8.94%

Source: U.S. Census, 2000, WisDOA, 2019 and NCWRPC, 2019

Between 2000 and 2019, most communities within Adams County have experienced an increase in their population base (refer to Table 3). The greatest amount of growth occurred in the Town of Colburn with a 25% increase between 2000 and 2019. The Town of Dell Prairie continued to have strong growth, increasing nearly 15% over that time period. The City of Wisconsin Dells has also exhibited strong growth numbers within Adams County as a result of annexing into the Town of Dell Prairie. However, the relatively small numbers involved skew the result.

Table 3 Population and Households of Minor Civil Divisions						
MINOR CIVIL DIVISION	2000 Population	2000 Households	2019 Population	2019 Households	'00-'19 % Population	'00-'19 % Households
Adams town	1,267	547	1,365	593	7.7%	8.4%
Big Flats town	946	402	1,037	453	9.6%	12.7%
Colburn town	181	83	227	111	25.4%	33.7%
Dell Prairie town	1,415	553	1,625	663	14.8%	19.9%
Easton town	1,194	486	1,107	467	-7.3%	-3.9%
Jackson town	926	397	987	457	6.6%	15.1%
Leola town	265	107	299	123	12.8%	15.0%
Lincoln town	311	129	293	128	-5.8%	-0.8%
Monroe town	363	168	410	207	12.9%	23.2%
New Chester* town	2,141	371	1,890	818	-11.7%	120.5%
New Haven town	657	260	674	272	2.6%	4.6%
Preston town	1,360	561	1,401	623	3.0%	11.1%
Quincy town	1,181	569	1,185	584	0.3%	2.6%
Richfield town	144	62	156	77	8.3%	24.2%
Rome town	2,656	1,181	2,800	1321	5.4%	11.9%
Springville town	1,167	487	1,300	531	11.4%	9.0%
Strongs Prairie town	1,115	502	1,165	537	4.5%	7.0%
Friendship village	781	257	730	319	-6.5%	24.1%
Adams city	1,831	769	1,920	873	4.9%	13.5%
Wisconsin Dells city (part)	19	9	59	30	210.5%	233.3%
Adams County Total	19,920	7,900	20,630	9,187	3.6%	16.3%

Source: U.S. Census, 2000, WisDOA, 2019 and NCWRPC, 2019

*#s skewed by inc. of prison pop.

According to the Wisconsin Department of Workforce Development the median age in Adams County is about 52.6, and characterizes it as "relatively old in comparison to the State's median age of 39.1. The County has been identified as a retirement area resulting from being a vacation spot for many seasonal homeowners. Location of seasonal housing is a strong indicator in terms of retirement location. In Adams County 44.3% of all housing units have been identified as seasonal/recreational, which is among the highest percentages in the State.

SEASONAL POPULATION

The impact of this seasonal population cannot be overlooked when planning for hazards. Table 4 shows potential seasonal residents by municipality estimated based on seasonal housing data presented in the 2010 Census. Determining when and for how long these seasonal residents will be in the County is problematic, but the numbers give some indication of what weekend or other peak period population levels might be.

Table 4 Estimated Seasonal Resident Population		
<i>Municipality</i>	<i>Seasonal Housing Units</i>	<i>Estimated Seasonal Population</i>
Adams town	261	600
Big Flats town	599	1,372
Colburn town	100	205
Dell Prairie town	249	610
Easton town	312	739
Jackson town	595	1,285
Leola town	82	199
Lincoln town	82	188
Monroe town	350	693
New Chester town	262	605
New Haven town	101	250
Preston town	473	1,064
Quincy town	1,050	2,132
Richfield town	56	114
Rome town	1,917	4,064
Springville town	460	1,127
Strongs Prairie town	690	1,497
Adams city	24	55
Friendship village	26	57
Wisconsin Dells (part)	35	69
Adams County	7,724	16,926

Source: U.S. Census, 2010 and NCWRPC, 2019

Another component of the seasonal population includes short-term accommodations such as campgrounds or hotel-style lodging. The scope of this plan did not provide for a detailed inventory of accommodations, however the Adams County Outdoor Recreation Plan identifies about 1,900 campsites within the County including 500 at Petenwell County Park in the Town of Monroe, 200 at Castle Rock County Park in the Town of Quincy, 41 at Roche-A-Cri State Park in the Town of Preston and 1,160 private sites in various campgrounds across the County.

In addition, the NCWRPC estimates that there are over 860 resort / motel type rooms within the County including the 620 room (equivalents) Chula Vista Resort within the

area annexed to the City of Wisconsin Dells and 160 units at Northern Bay in Strongs Prairie.

EMPLOYMENT

The County's highly seasonal economy is reflected in the large share of workers in seasonal leisure and hospitality jobs. The leisure and hospitalities industries employ more than a quarter of total employment. Employment in the leisure and hospitality sector swells to cater to the waves of tourists that move through the County each year, as well as to the retirees relocating here. As a result, Adams has a higher concentration of food preparation and sales related occupations than the statewide average.

Table 5 Top Employers in Adams County			
Company	Product or Service	Size	Location
Chula Vista Inc.	Hotels and motels...	500-999	C. Wisconsin Dells
Adams-Friendship Public School	Elementary and secondary schools	250-499	Various locations
Oxford Federal Correctional Institution	Correctional institutions	250-499	T. of New Chester
County of Adams	Public services	200-249	Various locations
WestRock	Corrugated & solid fiber box mfg	100-249	C. of Adams
Gundersen Moundview Hospital and Clinics	General medical & surgical hospitals	100-249	V. of Friendship
Heartland Farms Inc.	Potato & Vegetable Farming	50-99	Various locations
AF County Market	Supermarkets and other grocery stores	50-99	C. of Adams
Villa Pines Living Ctr	Nursing care facilities	50-99	V. of Friendship
Woodside Sports	Amusement and Theme Parks	50-99	Various locations

Source: Wisconsin Department of Workforce Development, 2014

Accommodation and food services and drinking places together employ over 1,165 workers. Many of these jobs are seasonal or part-time. As resorts in the Wisconsin Dells area continue to expand, the accommodations sector within the County has added significant jobs. Chula Vista Resort has actually grown into the largest employer in Adams County, refer to Table 5.

The education and health sector is the second largest source of jobs in the County. The Adams-Friendship School District is the second largest employer in the County. Moundview Hospital is one of the largest employers in the County, and Villa Pines Living Center nursing home is also in the top ten employers. Government is also a significant employer, where the Oxford Federal Corrections Facility near Grand Marsh is the third largest employer in the County.

Looking at the concentration of employment geographically shows the range of jobs spread across the County. However, the locations of major employers again become evident: the City of Adams has the highest concentration of jobs as the commercial center of the County, Friendship has County government and New Chester the Federal prison, while Chula Vista is in Wisconsin Dells. Identifying locations of large employment is important when prioritizing hazard mitigation strategies.

In addition to the seasonal swells in employment, the number of people working in a given locality fluctuates on a daily basis. The average commute time for Adams County residents is nearly 28 minutes. The county is a net exporter of labor. In other words, the County has fewer local jobs than residents who work. According to the County Comprehensive Plan, there are approximately 5,583 jobs within the County. About 2,288 of those jobs are held by residents of the County, while 3,295 jobs are filled by people commuting in from surrounding areas. At the same time, about 4,931 residents of the County travel to jobs located in other counties.

Agriculture is a major component of the economy in Adams County. There is significant agricultural employment in the area. The fact that a large portion of this employment is made up of migrant seasonal workers makes it difficult to quantify and track.

Economic Impact of Job Loss in Adams County

To help determine the potential impact of a hazard occurrence on the economy of the County, EMSI economic modeling software was used to estimate the cumulative effects of job losses in some of the top industry sectors of the County. A catastrophic, worst case, scenario is examined. Actual impacts would vary by degree of severity of the event. APPENDIX C contains a detailed printout of the analysis, and Table 6 shows a summary.

Table 6	Economic Impact of Catastrophic Event on Major Industrial Sectors of Adams County			
Sector	# Firms	Multiplier	Potential Jobs Impacted	Earnings
Crop Production	22	1.25	1,208	\$41,138,951
Corrugated Box Mfg	1	1.22	336	\$19,378,418
Convenience Stores	8	1.14	153	\$2,933,519
Hotels/Motels	5	1.18	775	\$19,213,446
<i>Source: EMSI Economic Modeling Specialists and NCWRPC, 2015.</i>				

LAND USE/LAND COVER AND DEVELOPMENT PATTERNS

Land use is an important determinant in the potential impact a particular hazard may have, and in action which may be taken to mitigate the hazard impacts. An understanding of the amount, type, and spatial distribution of urban and rural land uses within the County is an important consideration in the development of a sound hazard mitigation plan.

The Adams County Comprehensive Plan has categorized land use in Adams County into classifications. Aerial photos were used to digitize a land use Geographic Information System (GIS) coverage. Map 2 shows the land use and development concentrations in Adams County. Table 7 shows the acreage and percent of each classification.

FORESTRY AND AGRICULTURE

The dominant land uses in Adams County are forestry and agriculture. Land area in the County is approximately 58 percent forested, comprised of nearly 254,000 acres of woodland. Agricultural land covers another 27 percent of the county's land area. The main agricultural practices in the county are irrigated vegetables and dairy farming. Cranberry production has expanded in the County, particularly in the Town of Leola. Agriculture is scattered throughout the County but much of it is on the eastern side. According to the Wisconsin Agricultural Statistic Service, Adams County actually gained farmland during the 1980's and 1990's – something uncharacteristic compared to the majority of Wisconsin's counties. FSA crop statistics indicate this trend is continuing with active croplands increasing from 69,498 acres in 2010 to 78,589 acres in 2014.

Generalized Land Use Adams County Comprehensive Plan 2019		
Description	Acres	Percent
Agriculture*	118,737	27.0%
Commercial and Industrial	2,602	0.6%
Public / Institutional	779	0.2%
Outdoor Recreation	1,739	0.4%
Residential	19,442	4.4%
Transportation	15,038	3.4%
Water	27,934	6.3%
Woodlands	253,962	57.7%
Total	440,234	100.0%

Source: NCWRPC Inventory 2015, *Broadly Includes farm areas in addition to active cropland: cranberry, open field & grasslands and other lands.

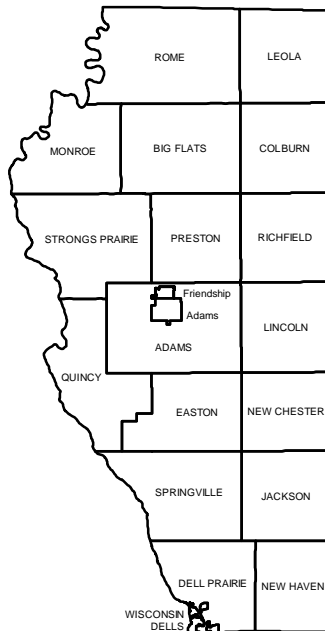
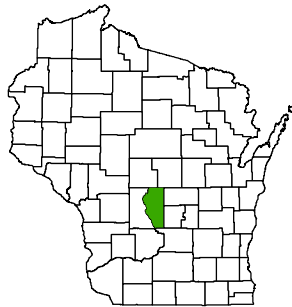
RESIDENTIAL DEVELOPMENT

Land in residential development makes up 4.4 percent of the total county area. Residential concentrations are scattered throughout the county (see "Population and Households" above). Much of the scattered rural development is related to direct recreational demand as various types of housing have clustered along streams and lakes.

There are a number of mobile home parks in the county. According to the U.S. Census, there were 4,380 mobile homes in 2010. This is about 25 percent of housing units for the County compared to about 4 percent for the entire state. This is significant due to their vulnerability in natural hazards especially tornados. Map 15 displays the mobile home concentrations within the County.

Legend

-  Minor Civil Divisions
-  Agriculture
-  Commercial
-  Cranberry Bog
-  Governmental
-  Industrial
-  Multi-Family
-  Open Lands
-  Outdoor Recreation
-  Residential
-  Transportation
-  Water
-  Woodlands



Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

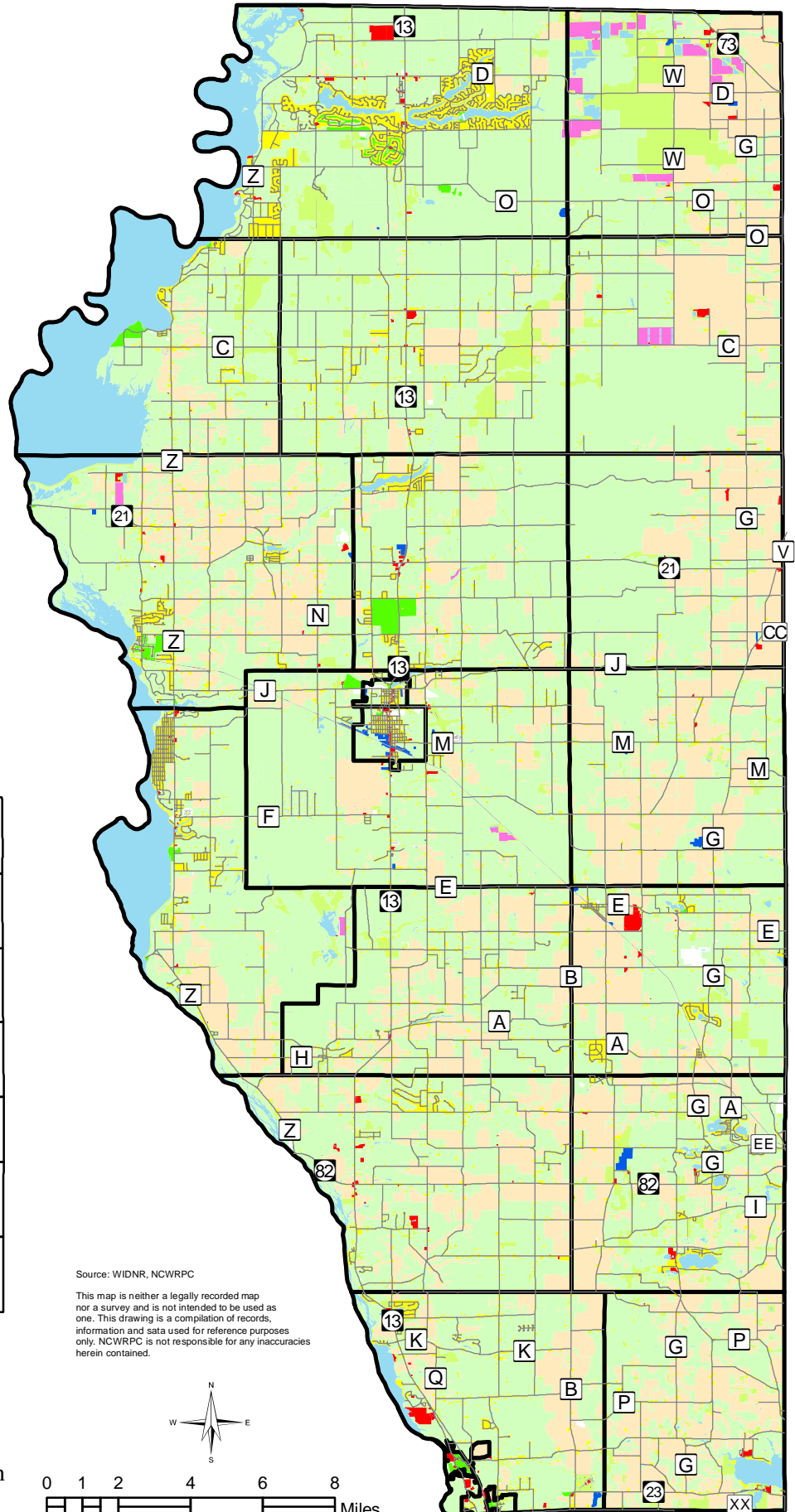


Prepared By:
**North Central
 Wisconsin Regional
 Planning Commission**

210 McClellan St., Suite 210, Wausau, WI 54403
 715-849-5510 staff@ncwrpc.org - www.ncwrpc.org



0 1 2 4 6 8
 Miles



COMMERCIAL AND INDUSTRIAL DEVELOPMENT

Commercial and industrial development makes up only about 0.6 percent of the total area of the County. Land use for commercial and industrial development is also scattered throughout the county. There are four designated industrial parks in Adams County. They are in the City of Adams, Village of Friendship, Town of Preston, and Town of Rome. Other industrial sites are located in the towns of Jackson and Lincoln. Commercial activity is located in the City of Adams and Friendship where it serves as a sub-regional service center supported by the surrounding agri-business and tourist industry. Commercial activity in the unincorporated areas is primarily dominated by private commercial recreation.

SURFACE WATER

The majority of the land in the County is part of the Central and Upper Wisconsin River Basins. Five main watersheds make up the two Wisconsin River basins in Adams County – Fourteen Mile Creek, Big Roche A Cri, Little Roche A Cri, Duck and Plainville Creeks, and Neenah Creek (see Map 3). The Johnstown terminal moraine in southeastern Adams County forms the drainage divide between the Wisconsin and Upper Fox River Basins. Neenah Creek is the main watershed in Adams County for Upper Fox Basin.

Within the watersheds, there are 73 interior streams covering 234.5 linear miles and 450 surface acres (see Map 3), but 12 (of 26) named streams and 27 (of 47) unnamed streams possessing 31 percent of the total stream frontage have average widths of less than 10 feet, making them relatively undesirable for development. However, all the streams, like the lakes, are important in the hydrological and ecological regime and should be protected by shoreland zoning and physical protective measures.

Streams in Adams County, except the Wisconsin River, have their headwaters in outwash plains, which contribute relatively large and constant amounts of groundwater base flow to the streams. Regional average runoff in Adams County is about nine inches/0.7 cfs per square mile of drainage basin. The Wisconsin River is well regulated and has a relatively constant flow.

The total surface water area of lakes and streams in Adams County exceeds 25,000 acres. Petenwell and Castle Rock flowages, the 2nd and 5th largest lakes in the state, cover 16,295 acres together. Unlike most counties in the west central part of the state, Adams County has 7 natural lakes, all located on the east side of the moraine, in the Towns of Jackson and New Chester. All the other lakes in the county are impoundments (man-made lakes). Most of these are located west of the moraine. The 48 interior lakes add 2,439 acres, of which 22 have surface areas of less than 5 acres. Twenty-nine lakes have maximum depths of less than 10 feet. Several are



Castle Rock Lake

subject to winter fishkill because of their shallowness. The two flowages and the 22 named lakes provide the bulk of the County's high quality lake resources. Of the 26 unnamed lakes, the largest is 12.5 acres, only one is over ten feet deep, and 17 have no fishery. Named lakes have a total of about 71 miles of shoreline, and unnamed lakes add another 7.

Lake Sherwood, Lake Camelot, and Lake Arrowhead Dams are located in the Town of Rome, see Map 4. These lakes were designed for recreational and economic purposes related to property development. They were formed by artificially constructing earthen dams made of native soil material across the river valleys. In 1967, Lake Sherwood was the first of the three dams created by damming Fourteen Mile and Spring Branch creeks. Lake Camelot was created in 1969 by damming Spring Branch Creek near the end of the upper arm of Lake Sherwood and Fourteen Mile Creek near the end of the lower arm. A channel between the two diverts part of the flow of Fourteen Mile Creek to the upper part of Lake Camelot to reduce stagnation problems that could have arisen from low flow in Spring Branch Creek and the resultant slow replacement of water in the lake. The Lake Arrowhead Dam was the last of the dams constructed in 1978 over Fourteen Mile Creek and is located approximately 2.7 miles west of State Highway 13. Nine of the dams in the county are owned by Adams County and managed by the Adams County Land & Water Conservation Department.

Floodplains and wetlands are important subsidiary components to the surface water system as described below.

Floodplain

The primary value of floodplains is their role in natural flood control. Flood plains represent areas where excess water can be accommodated whether through drainage by streams or through storage by wetlands and other natural detention/retention areas. Specific areas that will be inundated will depend upon the amount of water, the distance and speed that water travels, and the topography of the area. If uninterrupted by development, the areas shown on a map as floodplains should be able to handle the severest (regional) flood, i.e. those that have a probability of occurring once every one hundred years.

There is a value in preserving and protecting these natural flood control areas from encroachment. First, by preventing development in the floodplain, the cost of building dikes, levies, or other man-made flood control devices will be saved. Second, for each structure that is constructed in a flood-prone area, that flood-prone area expands, potentially subjecting other structures originally built outside the delineated flood hazard area to the risk of flooding. Each new structure (or modification to existing) placed in the flood plain puts more life and property in danger.

Counties, cities, and villages are required to adopt reasonable and effective floodplain zoning ordinances. The requirement is found in section 87.30 of the Wisconsin Statutes and Chapter NR 116 of the Wisconsin Administrative Code. Floodplain zoning is

designed to protect individuals, private property, and public investments from flood damage.

Floodplain zoning maps identify areas where major floods occur. Regulations prohibit development in the floodway, the most dangerous flood area. In other flood areas, the flood fringe, development that is built above flood levels and otherwise flood-protected is allowed if it is in accordance with local ordinances. For regulatory purposes, a floodplain is generally defined as land where there is a 1% chance of flooding in any year (also known as the 100-year floodplain).

In order to participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), the County, City of Adams, and Village of Friendship have completed a Flood Insurance Study and a Flood Insurance Rate Map (FIRM) that encompasses Adams County, see Table 8 for summary of NFIP status. This FIRM delineates the "A" Zones including the floodway and flood fringe which are those areas inundated by the 100-year flood within the County. Adams County has updated its FIRM to digital standards. The digital FIRMs are referred to as DFIRM. The NCWRPC downloaded the DFIRM from FEMA's website for use in this plan. Although unofficial, the digital files indicate there are 19,016 acres floodplain in Adams County, or 4.6 percent of the land area. Map 4 shows the approximate floodplains in Adams County. Floodplains in Adams are small and typically flood only during periods of exceptionally heavy rainfall.

Table 8 FEMA Community Status Book Report Communities Participating in the National Flood Insurance Program Wisconsin - Adams County				
Community	Initial FHBM	Initial FIRM	Current Map	Program Entry
Adams County	02/20/76	11/16/90	06/17/08	11/16/90
City of Adams	05/14/76	09/01/88	NSFHA*	09/06/88
Village of Friendship	05/03/74	11/16/90	06/17/08	11/16/90
<i>*No special flood hazard area - all zone C.</i>				

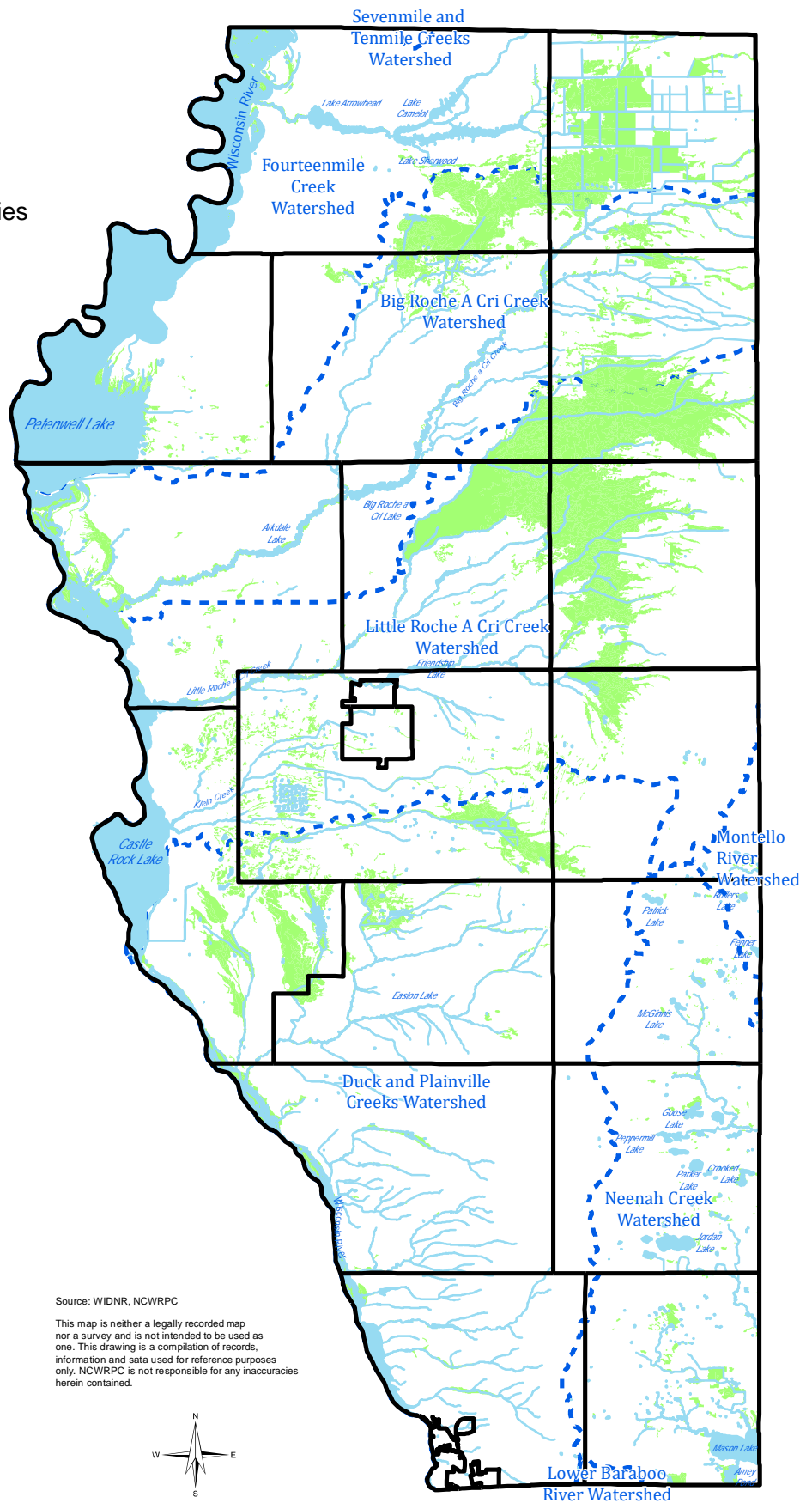
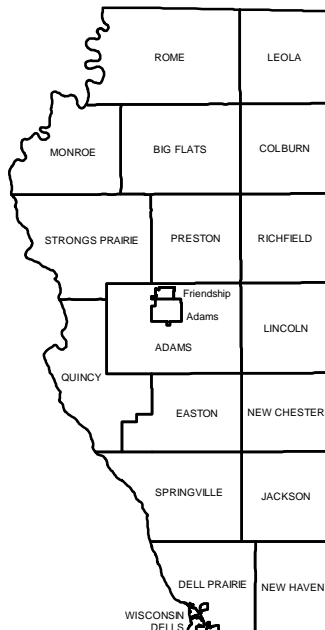
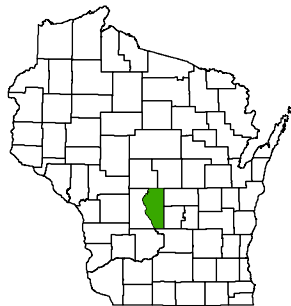
Source: FEMA, 2019

Currently, there are no repetitive loss structures, those with multiple flood insurance claims, in Adams County.

Adams County has also chosen to participate in the Community Rating System (CRS), which is a voluntary program that provides incentives for floodplain management activities that exceed minimum requirements for NFIP. Adams County has qualified for a Class 7 rating in the CRS which results in a 15% discount for flood insurance premiums in special flood hazard areas and 5% in non-special flood hazard areas.

Legend

-  Minor Civil Divisions
-  Wetlands
-  Watershed Boundaries
-  Water



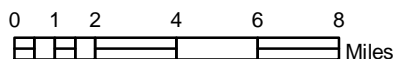
Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

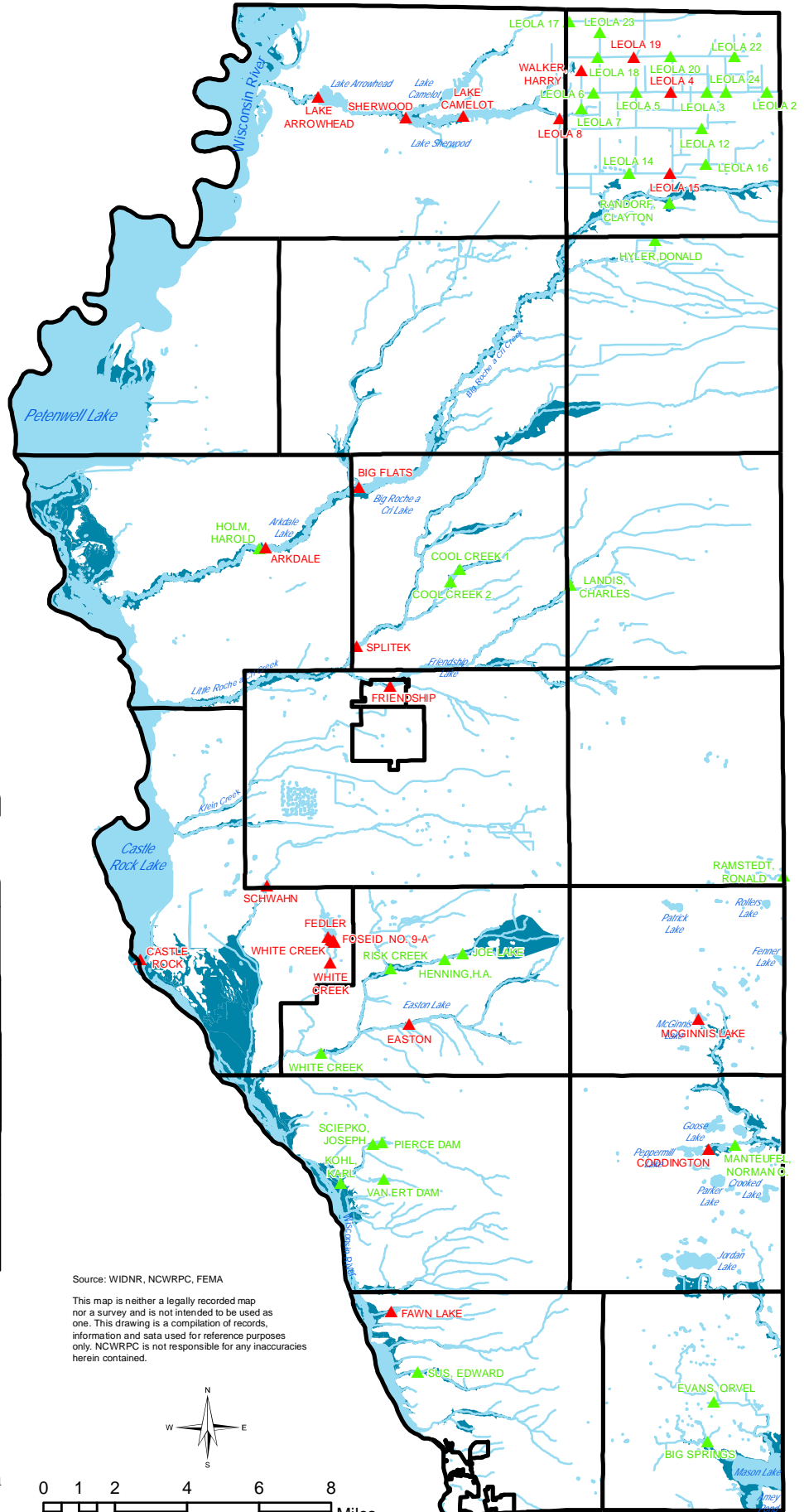
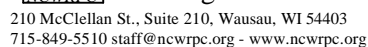
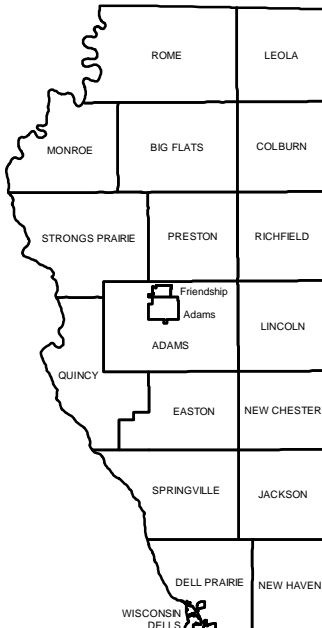


Prepared By:
**North Central
Wisconsin Regional
Planning Commission**

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org



- Large
- Small
- Water
- Floodplain



The Biggert-Waters Flood Insurance Reform Act was signed into law in July, 2012. This act implemented significant reforms to the structure of flood insurance under the National Flood Insurance Program (NFIP). Then, on March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) into law amending the NFIP further. These new laws impact the various elements of the NFIP, including Insurance, Flood Mapping, Mitigation, and Floodplain management.

HFIAA repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented. The new law lowers the recent rate increases on some policies, prevents some future rate increases, and implements a surcharge on all policyholders. The Act also repeals certain rate increases that have already gone into effect and provides for refunds to those policyholders. Both of these laws are important to local floodplain managers and planners because rate structure increases may increase interest of policy holders that own floodprone properties in alternatives to mitigate both flood risk and flood insurance costs for those properties.

Wetlands

Wetlands perform many indispensable roles in the function of the hydrologic cycle and local ecological systems. In terms of hazard mitigation, they act as water storage devices in times of high water. Like sponges, wetlands absorb excess water and release it back into the watershed slowly, preventing flooding and minimizing flood damage. As more impermeable surfaces are developed, this excess capacity for water runoff storage becomes increasingly important.

The DNR has also identified the location of wetlands on their WISCLAND database. According to this, Adams County has 48,348 acres, or 11 percent of its total area. Map 3 shows these wetland areas in Adams County. There are concentrations of wetlands in Adams County including Leola Marsh Wildlife Area, Colburn Wildlife Area, and the Quincy Bluff and Wetland Natural Area. Additional wetlands are associated with the floodplains discussed above, however, smaller wetlands are scattered throughout the County.

Eradication of wetlands can occur through the use of fill material. This can destroy the hydrological function of the site and open the area to improper development. The Wisconsin Department of Natural Resources (DNR) has promulgated minimum standards for managing wetlands.

OTHER LAND COVER/USES

Recreational lands including parks and outdoor sports facilities total about 1,700 acres or 4/10th of 1 percent of the county land area. Other lands may have recreational aspects, particularly woodlands. Governmental, public and institutional lands total about 779 acres or about 0.2% of the County land area. The transportation category is primarily the roadway travel corridors for federal, state, county and local highways and roads. Sometimes overlooked, transportation land use can be significant. In Adams

County, surface transportation facilities consume about 15,000 acres of land or about 3.4 percent of total land area. Note that this is more than three times as much land area as is used for commercial, industrial and institutional uses in the County.

FUTURE GROWTH AND DEVELOPMENT IN ADAMS COUNTY

Adams County's population has increased 3.6% over the last nineteen years for a net gain of 710 residents. The County's rate of growth has been declining from the very high rates observed during the previous decades. However, with the economy continuing to improve following the downturn, growth is expected to rebound. The County's rate of growth has historically been faster than state and national averages. For example going back to the 1990s, the County's population increased 27% over the decade, compared to the state's growth of 10% over this same period. By 2038, Adams County will have grown to a population of about 21,374, a gain of 744 residents if the growth rate continues at the long-term trend level. This equates to approximately 317 structures or about 17 per year.

From a net growth perspective, residential migration into Adams County has been solely responsible for all of its population growth because natural growth has been negative (more deaths than births). This growth pattern is reflective of an aging population and seasonal-to-permanent housing markets.

The Towns of Rome and Monroe in the northwest corner of the County should continue to see strong growth as the primary lakeshore/riverfront development areas of the County. The other riverfront towns including Strongs Prairie, Quincy, Springville and Dell Prairie will also likely see continued development due to the attraction of the river and other recreational amenities. In addition, the "northern" towns of Leola, Big Flats and Preston and the "southern" towns of Jackson and New Haven will continue to grow in part as "bedroom communities" to Wisconsin Rapids and Wisconsin Dells, respectively.

New commercial and industrial development is expected to be gradual over time, paralleling population growth. The most significant concentrations of this development will likely be in the Town of Rome, City of Adams and Town of Dell Prairie. Notable areas of new development include the Town of Rome and the Chula Vista complex in Dell Prairie. In the City of Adams, new commercial facilities include an Aspirus clinic, and a new YMCA facility is being planned. Even with these developments, the County is expected to remain a net exporter of labor as proximity to the Dells and the Wisconsin Rapids area attracts much of the new commercial and industrial development that would serve Adams County.

Development of new infrastructure or public facilities remains somewhat restricted due to constraints on local government budgets. However, some needed projects do eventually move forward. For example, the Town of Rome just completed a new police and EMS building. A new fire station was opened in the City of Adams. And, the City

has done extensive upgrades to its water and wastewater systems. Adams County is currently working on major renovations and expansion of the Courthouse which will include a new administration building. The Town of Jackson is considering a new town hall and storage shed. The majority of population growth will occur in the towns, which, with the exception of Rome, do not provide extensive services, and budget constraints will curtail local governments' ability to develop new facilities and result in a tendency to make do with existing infrastructure and delay expansion plans.

Any new buildings and facilities, including new housing units, will be subject to each hazard addressed in this Plan. Even best efforts to keep new building out of flood plain and dam shadow areas cannot guarantee new construction will be exempt from flooding due to the nature of flooding within the County.

The County's population is generally older, with a median age of 52 years, versus statewide median age of 39 years. Over the next few decades, the residential base will become even older, aging much more quickly than the state as a whole. In fact, the number of persons 60 and older will likely exceed the population 16 and under by 2030. This will have implications affecting the demand for emergency services.

PUBLIC FACILITIES AND SERVICES

TRANSPORTATION

The transportation system of Adams County provides the basis for movement of goods and people through the County. An efficient transportation system is essential to the sound social and economic development of the County and the Region. The analysis of transportation routes should be considered in the possible event of a disaster (See Map 5).

The principal highway serving the County is north-south, State Trunk Highway (STH) 13 which bisects the County through Adams/Friendship. STHs 21 and 82 provide the main east-west routes, and State highways 23 and 73 also serve the County. These highways link the County with neighboring communities and are vital to the County's tourism and recreation-based economy.

Networks of county trunk highways collect traffic from rural land uses. These county highways serve an important role in linking the area's agricultural and timber resources to the County's major highways and population centers. Local roads provide access to local development, farming and forest areas, as well as to the County's lake areas.

The Wisconsin Department of Transportation maintains 7 bridges on state highways within the County. Adams County itself owns another 10 bridges on various County highways. Local roads have 21 bridges belonging to various towns. There is also one rail bridge in the Town of New Chester.

Adams County Health & Human Services coordinates transit service for elderly and disabled in the County. Vans and mini-buses provide work routes, a weekly grocery

run, a monthly food pantry run and serve nutrition sites. A volunteer driver network is also available.

The Union Pacific Railroad also serves Adams County. The rail line arcs east-west with a yard at City of Adams. There are approximately seven through trains per day on this line.

The “Adams County Legion Field” airport located east of the City serves the area. It is a basic utility airport designed for aircraft under 12,500 pounds and 49 feet in wingspan. There are 5 other landing strips within the County.

UTILITIES

Utility systems are important in hazard mitigation planning because of the dependency on water, wastewater treatment, gas service, electricity, and communications. Because of this reliance and vulnerability to hazards, utility systems must be identified for this Plan, see Map 6.

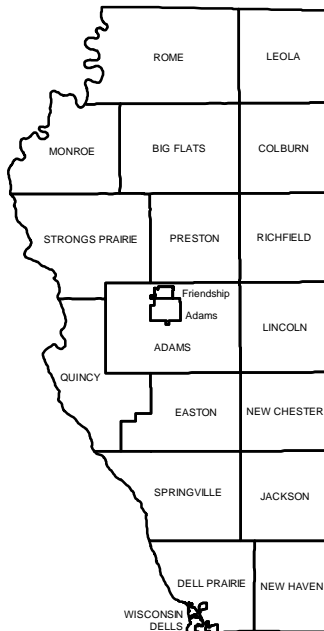
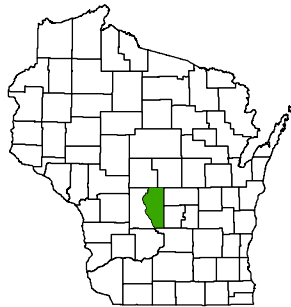
Water: The protection of the public water supply facilities from potential contamination from hazards such as flooding is a consideration for hazard mitigation planning. The City of Adams provides municipal water supplies for domestic and commercial use within the City as well as the Village of Friendship, while the Oxford Federal Correctional Institution supplies water for their inmates. The Rome Water Utility also provides a water supply system to customers around Lake Camelot.

The protection of the wastewater facilities is an important consideration for hazard mitigation planning because of its potential to contaminate nearby waterbodies in the event of high water. Also of concern during periods of flooding is the threat of damage to infrastructure and associated facilities. A municipal wastewater treatment facility serves the Adams-Friendship area. This utility is located on the west side of Friendship along the Little Roche a Cri Creek but outside the floodplain area. A private wastewater treatment facility serves the Easton Lake District. It is located in the Town of Easton along Campbell Creek. Another is located in Dell Prairie. These are of concern because of their locations within a designated floodplain.

Electric: The Adams-Columbia Electric Cooperative serves the largest part of the County. The Waushara Electric Cooperative serves part of the northeast quarter of the County while Alliant Energy serves the Adams-Friendship area and parts of the Towns of Dell Prairie and Leola. Pioneer Power and Light serves most of New Chester. There are several high-voltage transmission lines traversing the County. One line runs along the Wisconsin River to the north from the crossing at WI-21; one is located near the River from the Wisconsin Dells to the Town of Springville; and another cuts across the center of the County from the Town of Quincy eastward to the Town of Lincoln.

Legend

- Minor Civil Divisions
- State Highways
- County Highways
- Local Roads
- ✈ Small General Aviation
- ✈ Paved Landing Strip (Private)
- ✈ Grass Strip (Private)
- +— Railroad
- Water



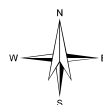
Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

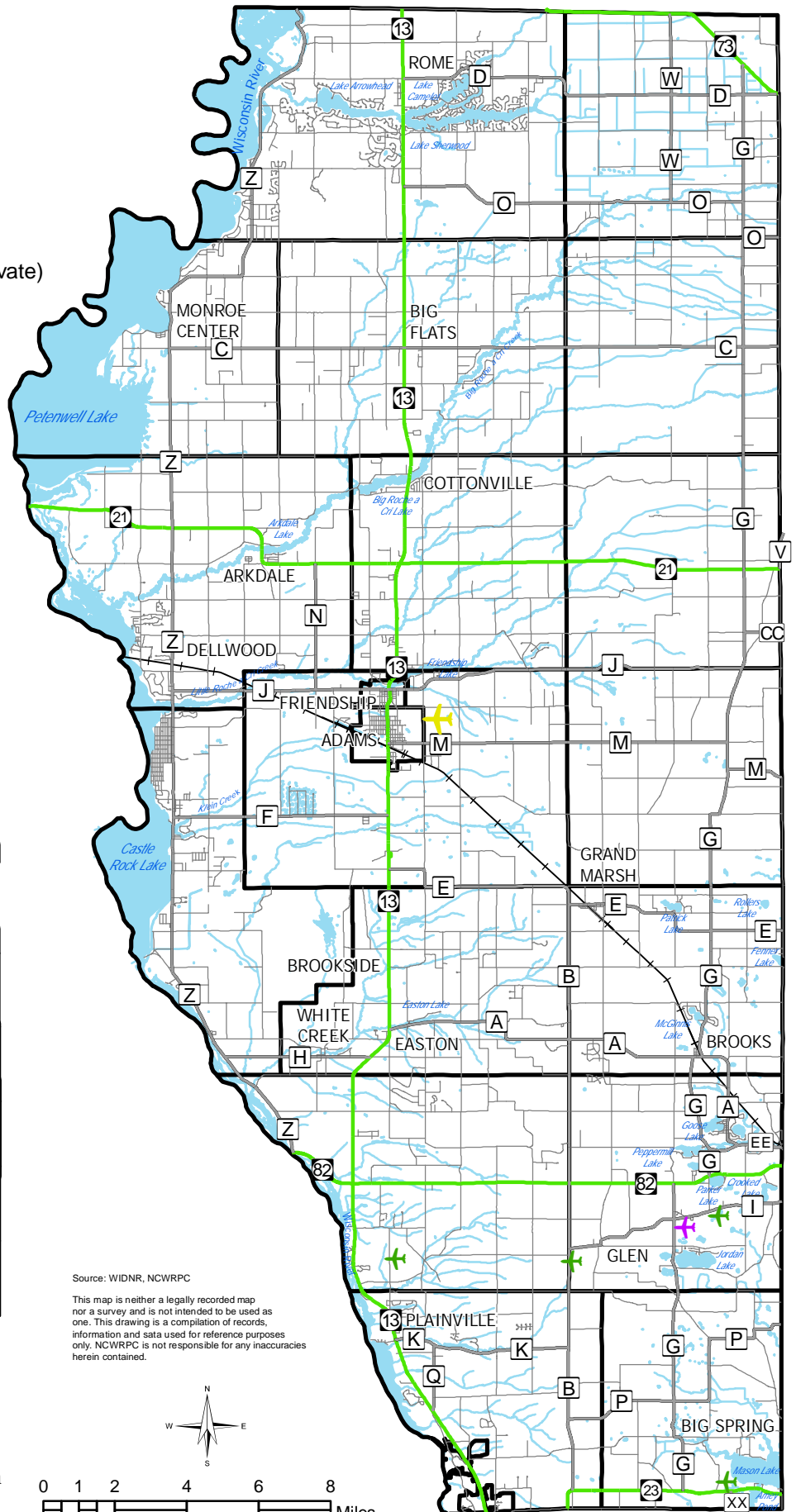


Prepared By:
**North Central
 Wisconsin Regional
 Planning Commission**

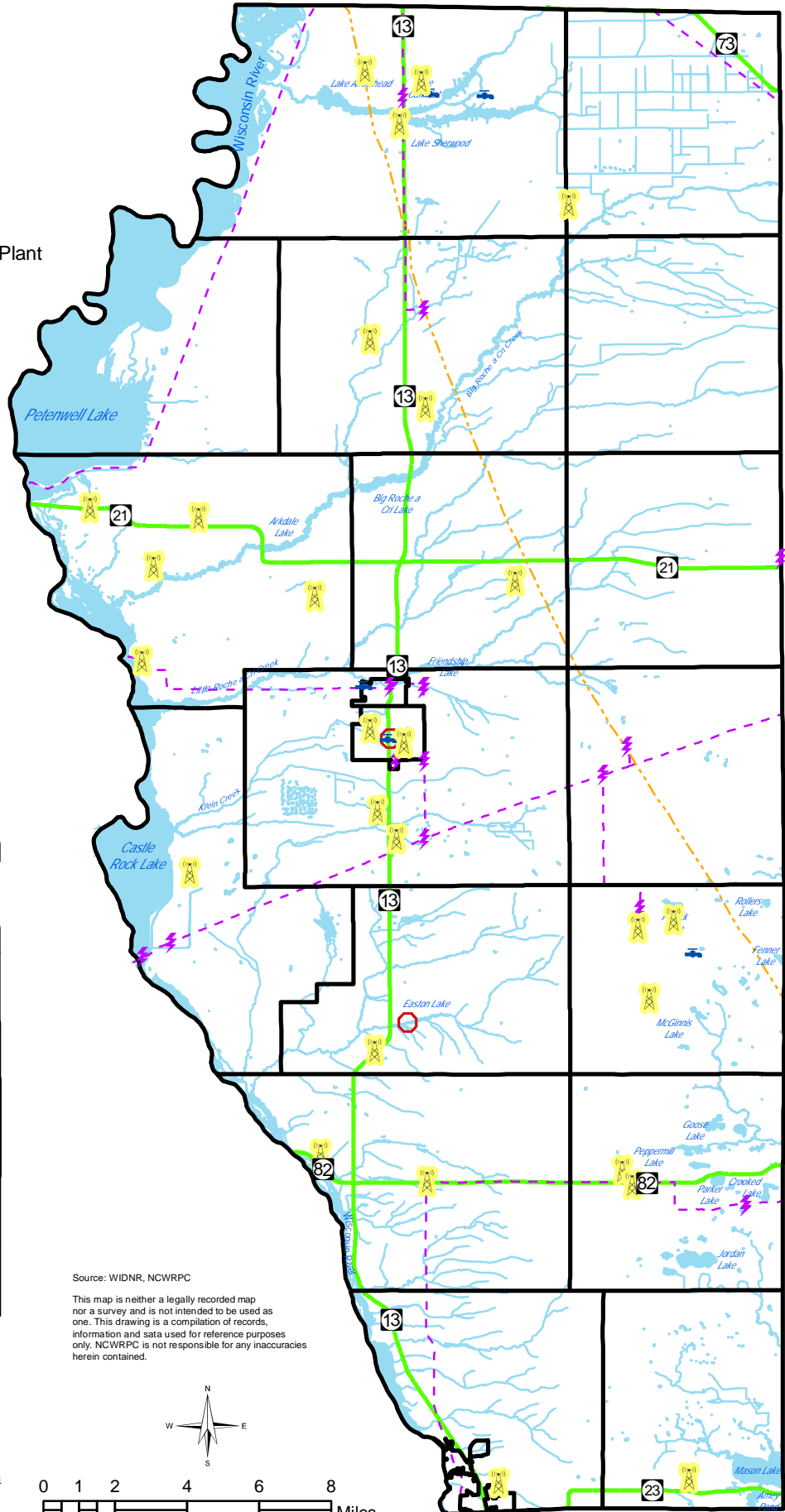
210 McClellan St., Suite 210, Wausau, WI 54403
 715-849-5510 staff@ncwrpc.org - www.ncwrpc.org



0 1 2 4 6 8
 Miles



A map of Wisconsin showing its county boundaries. The townships within Adams County are highlighted in black. The townships shown are: ROME, LEOLA, MONROE, BIG FLATS, COLBURN, STRONGS PRAIRIE, PRESTON, RICHFIELD, ADAMS (highlighted), LINCOLN, QUINCY, EASTON, NEW CHESTER, SPRINGVILLE, JACKSON, DELL PRAIRIE, and NEW HAVEN. The southern part of the state, including WISCONSIN DELLS, is partially visible at the bottom.



Natural Gas: The Wisconsin Gas Company distributes natural gas in the Adams-Friendship area and at the Federal Correctional Institution at Brooks. The remainder of the community depends upon LP gas from local suppliers. An oil pipeline crosses the county diagonally from the Town of Rome to the Town of New Chester.

Telecommunications: There are four telephone providers in the County – Wood County, Union, Verizon, and Marquette-Adams. Internet Dial-up service is available throughout the County. Some areas on the edge of the County have Integrated Service Digital Network (ISDN), an international digital standard for providing more bandwidth to consumers by adding a third data channel to standard copper twisted pair cables that can increase bandwidth to 144Kbps. Digital subscriber line (DSL) makes efficient use of copper wire using special equipment to provide broadband access on existing phone lines. Delivery of DSL service is dependent on the length of the customer's loop from the central office (depending on the technology used this can range from 10,000 to 18,000 feet). This distance can be extended by installation of an access multiplexer at an intervening point along the line.

There are several cell towers located in Adams County. Wireless, broadband service is provided in the Adams-Friendship area by the Marquette-Adams Telephone Cooperative. This service is available throughout the urbanized area from an antenna located in the City industrial park on a line-of-sight basis. A company operating out of Sauk County, offers dial-up service with a data compression system known as Slipstream Accelerator. This compression system can significantly increase the capacity of dial-up connections. Dial-up connections are only available in the fast-growing lakefront areas in the western part of the County. Wireless telephone coverage is intermittent throughout the County. Cable TV service is available from Charter Communications in both the City and Village as well as in the Town of Rome from Wisconsin Rapids and in Dell Prairie from Wisconsin Dells.

EMERGENCY SERVICES AND FACILITIES

The type and location of public emergency services are an important consideration in hazard mitigation planning, because of the potential direct involvement of such facilities in certain hazard situations. The location of fire stations, police departments, and ambulance services in Adams County are shown on Map 7. Adams County operates the 911-call center providing dispatch for virtually all of the emergency services discussed below.

Sheriff/Police: The Wisconsin State Patrol, the Adams County Sheriff's Office, the City of Adams Police Department, and the Town of Rome Police Department are the four law enforcement agencies that operate within Adams County. The State Patrol has statewide jurisdiction on all public roads but operates mainly on State and U.S. numbered highways as a matter of general practice. The County Sheriff provides general law enforcement services throughout the County and by contract to the Village of Friendship. The Adams' police force and the Town of Rome's police force serve their respective communities.

Historically, the rural and sparsely settled areas of Adams County have needed minimal police service. However, recent development and increasing population has multiplied law enforcement problems and increased demand for law enforcement services. Adams County has recognized this demand and added manpower and increased law enforcement expenditures.

Fire: Fire protection services in Adams County are provided by volunteer fire departments in a complex pattern with mutual aid assistance agreements between Towns. There are five fire departments located in Adams County that serve the local units of government: Rome, Big Flats, Quincy, Adams and New Chester. Five municipalities rely on the Adams County Fire District while five municipalities along the eastern and southern borders rely on fire departments located outside the county – Coloma, Hancock, Plainfield, Oxford and Kilbourn.

The City of Adams, and much of the central and western area of the County, receives service from the Adams Volunteer Fire District. The department maintains a station in the City of Adams and one in Arkdale. The Adams Fire Department covers a large area, including all of the City of Adams, the Village of Friendship and the Towns of Adams, Easton, Strongs Prairie, Preston, and Springville north of WI-82. This area has an ISO rating of seven (the level of fire protection on a one-to-ten scale where one is the highest rating) for properties within five miles of a station. For the areas of the City where fire hydrants exist, the ISO rating is four. A good ISO rating can have a positive impact on fire insurance premiums.

The Adams County Fire District and the various rural fire departments all continue to grow as needed based on the demands of the communities they serve. All existing departments are meeting the needs in the county. Each of these volunteer organizations annually reviews local needs and makes adjustments regarding staffing, equipment and facilities. These departments also coordinate with the County Emergency Management Department for various fire and other hazardous related issues.

In addition, the State of Wisconsin Department of Natural Resources (DNR) maintains a ranger station, located in the City of Adams, responsible for wildland fire suppression throughout the county. The DNR utilizes mutual aid agreements with all of the local and surrounding fire departments. Three fire towers are located in the county.

EMS: There are multiple ambulance service providers in the County. Various service agreements are in place to provide ambulance service in the County. These arrangements change regularly. Currently, a majority of the County is covered by LifeStar EMS. Waushara County covers the Town of Leola. Marquette County ambulance covers the Town of Jackson and part of the Town New Chester. Nekoosa provides emergency service to the Town of Rome through their fire department. Kilbourn provides service to the Towns of Dell Prairie, Springville, and New Haven.

Red Cross: The American Red Cross maintains agreements with the owner/operators of various facilities around the County to act as shelters in the event of an emergency. Schools and churches are the most common shelter facilities. Adams County is part of a larger chapter of the American Red Cross with ten other counties. The chapter's administrative office is located in Madison, but a volunteer disaster action team is maintained locally.

CRITICAL COMMUNITY FACILITIES

In addition to emergency service facilities, other community facilities are also important in hazard mitigation planning. Government administration buildings serve as the headquarters that link to resources in helping solve potential problems. Hospitals and ambulance services are very important for knowing where injured residents have to be transported and as to how many people each hospital can handle if a hazard would breakout.

Gundersen Moundview Hospital in the Village of Friendship is a 25-bed acute care facility with associated clinics.



Adams County Courthouse

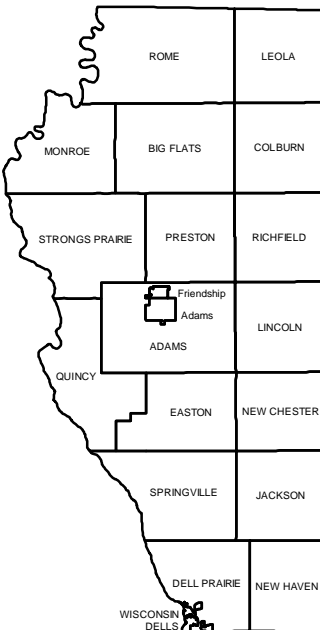


Clinic in Town of Rome

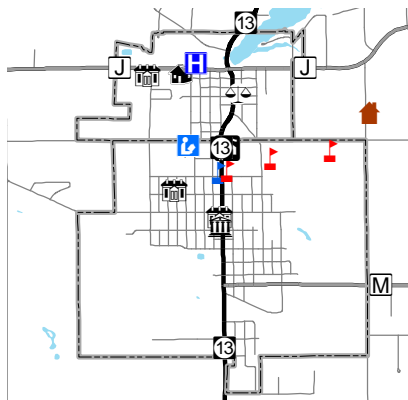
An Aspirus Clinic was recently opened in the City of Adams. There is also a clinic in the Town of Rome. Villa Pines Living Center in Friendship is the primary nursing home within the County. Nursing homes are vulnerable, because of the high level of assistance needed with the residents that live there. The schools are another facility that are important, since hundreds of the county's children are there for most of the year. Map 7 shows the location of selected types of critical community facilities within Adams County.

Legend

- | | | | |
|--|-----------------------|--|--------------------|
| | Minor Civil Divisions | | Highway Department |
| | State Highways | | Hospitals |
| | City Hall | | Library |
| | Correctional Facility | | Schools |
| | Courthouse | | Tech College |
| | DNR Ranger Station | | Town Hall |
| | | | Village Hall |
| | | | Tornado Shelter |
| | | | Water |



Adams - Friendship Inset



Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

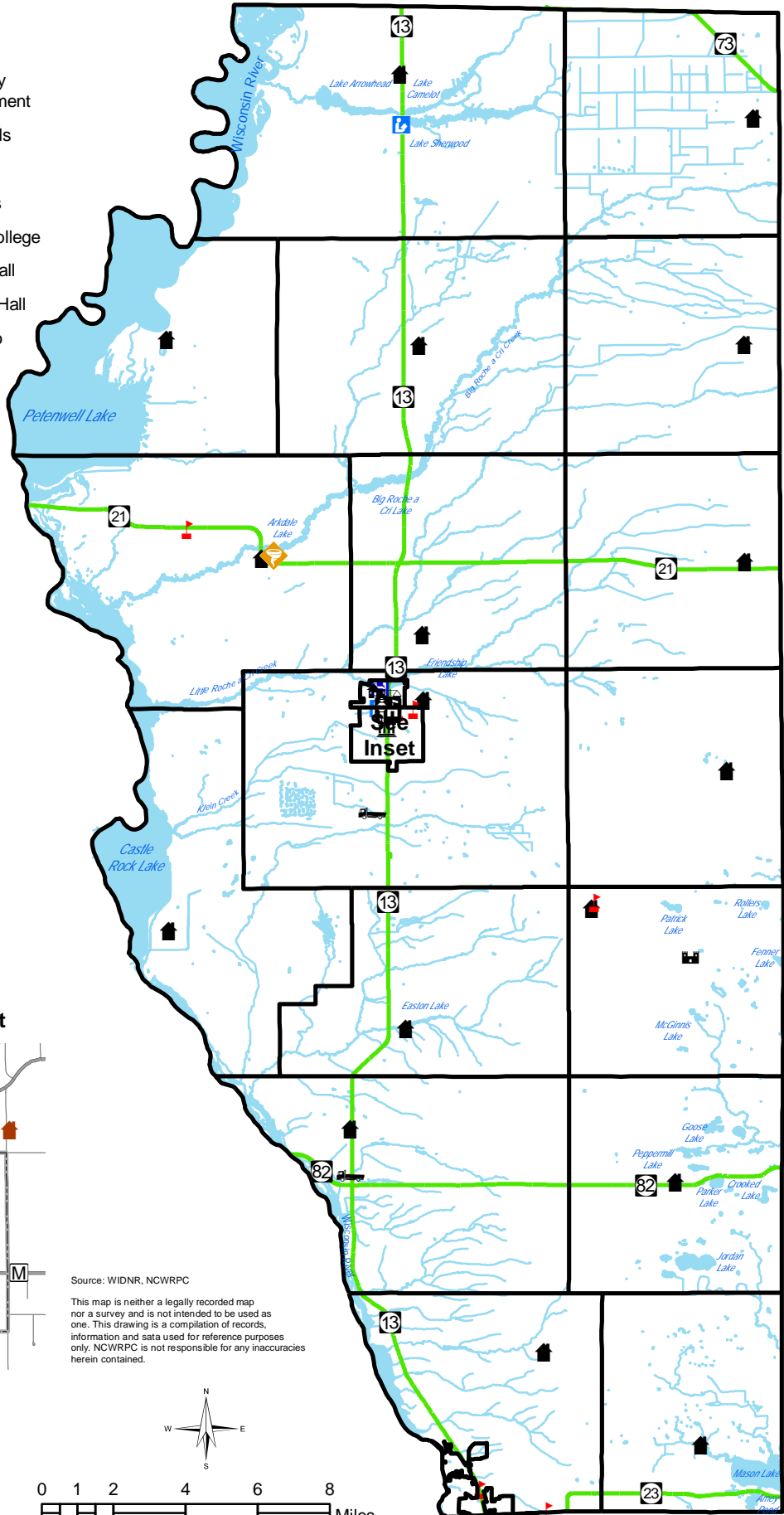


Prepared By:
North Central
Wisconsin Regional
Planning Commission

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org



0 1 2 4 6 8
Miles



INVENTORY & VALUE OF STRUCTURES & PROPERTY IN ADAMS COUNTY

The value of the real estate and personal property in a community reflects the upper end of the potential for property damages in each community. The annual equalized value of each municipality represents the Department of Revenue estimate of market value (Agricultural land is included at Use Value) of all taxable property. Property tax levies of jurisdictions are apportioned to each municipality on the basis of equalized value. Table 9 lists each municipality's total equalized values for real estate, personal property, and all property and the percent each municipality represents of the county total.

Table 9 Equalized Value by Municipality (2019)					
	Improvement Value	Land Value	Personal Property	Total	% of Total
Adams city	\$65,385,500	\$9,921,600	\$5,033,000	\$80,340,100	3.19%
Wisconsin Dells (part)	\$80,078,600	\$13,167,600	\$1,586,800	\$94,833,000	3.76%
Adams town	\$75,284,500	\$45,406,700	\$1,993,100	\$122,684,300	4.87%
Big Flats town	\$49,064,300	\$46,412,000	\$587,600	\$96,063,900	3.81%
Colburn town	\$40,337,000	\$17,032,900	\$910,200	\$58,280,100	2.31%
Dell Prairie town	\$108,400,700	\$53,680,300	\$567,300	\$162,648,300	6.45%
Easton town	\$49,133,200	\$33,767,300	\$204,400	\$83,104,900	3.30%
Jackson town	\$102,052,500	\$75,449,700	\$535,400	\$178,037,600	7.06%
Leola town	\$22,602,200	\$14,215,300	\$90,600	\$36,908,100	1.46%
Lincoln town	\$20,944,200	\$19,114,600	\$84,800	\$40,143,600	1.59%
Monroe town	\$51,932,500	\$34,565,900	\$748,000	\$87,246,400	3.46%
New Chester town	\$63,332,300	\$31,090,200	\$331,600	\$94,754,100	3.76%
New Haven town	\$29,723,000	\$23,752,500	\$115,700	\$53,591,200	2.13%
Preston town	\$86,774,500	\$50,433,300	\$892,000	\$138,099,800	5.48%
Quincy town	\$106,285,500	\$66,204,100	\$2,821,100	\$175,310,700	6.95%
Richfield town	\$15,612,100	\$15,661,200	\$36,600	\$31,309,900	1.24%
Rome town	\$416,401,100	\$230,183,800	\$5,678,300	\$652,263,200	25.87%
Springville town	\$63,906,900	\$38,320,600	\$830,300	\$103,057,800	4.09%
Strongs Prairie town	\$123,870,900	\$76,906,100	\$1,269,700	\$202,046,700	8.01%
Friendship village	\$22,415,200	\$6,053,400	\$1,675,000	\$30,143,600	1.20%
Adams County	\$1,593,536,700	\$901,339,100	\$25,991,500	\$2,520,867,300	100%

Source: WisDOR, 2019

The valuation of property in a community reflects the potential for property damages across the community. However, only taxable properties are included in this valuation. Tax exempt government properties are not included. With Adams County owning many critical facilities that are needed in times of disaster, the potential for damages to these structures could be devastating for the county. In Table 10, the county owned critical

facilities are listed with the general location they are in and the value of the facilities. Estimates for local government facilities are given in Tables 11 - 13.

Table 10 Value of County Owned Properties		
Name	Value*	Location
Courthouse / Sheriff	\$26,006,721	Friendship village
Communications Tower	\$310,668	Adams town
Fairgrounds	\$2,550,457	Friendship village
County Storage	\$938,536	Friendship village
Solid Waste Main Facility	\$3,861,984	Strongs Prairie
Social Services	\$3,079,877	Friendship village
Airport	\$513,590	Adams town
Industrial Park	\$277,615	Jackson town
Highway Department	\$6,148,450	Adams town
Highway Dept. Satellites	\$778,582	Various Locations
Community Center	\$4,600,492	Adams city
HHS Practical Cents Store	\$2,096,122	Adams city
Parks	\$4,179,599	Various locations
Emergency Shelters	\$224,057	Various Locations
Misc. Other	\$2,167,590	Various locations
Total	\$57,734,340	Above Locations

*=Includes insured buildings, contents, and property in the open.

Source: Statement of Values State of Wisconsin Local Government Property Insurance Fund, 2019.

Table 11 Value of City Owned Properties	
Property	Value*
Municipal Building	\$2,477,569.60
City Garage	\$463,578.50
Pump Station	\$317,317.00
Treatment Plant	\$6,716,608.80
Pavilion	\$80,538.70
3 Well Houses	\$1,802,684.40
2 Water Towers	\$1,716,321.20
Lift Station	\$444,666.20
Misc Other	\$363,214.50
Total	\$14,382,498.90

*includes insured building contents and property in the open.

Source: NCWRPC estimate, 2019

Table 12 Value of Village Owned Properties	
Property	Value*
Village Hall	\$985,619.80
Public Works Building	\$808,775.00
Beach Park	\$183,533.90
Park	\$200,965.60
Lift Station	\$86,225.70
Other Misc.	\$296,563.30
Total	\$2,561,683.30

*includes insured building contents

Source: NCWRPC estimate, 2019

Table 13: Value of Town Owned Properties		
Municipality	Property	Value*
Adams town	Town Hall/Garage	\$180,180.00
Big Flats town	Town Hall/Fire Dept	\$1,029,600.00
Colburn town	Town Hall/Garage	\$180,180.00
Dell Prairie town	Town Hall	\$90,090.00
Easton town	Town Hall	\$90,090.00
Jackson town	Town Hall	\$137,740.90
Leola town	Town Hall	\$84,345.80
Lincoln town	Town Hall/Garage	\$178,893.00
Monroe town	Town Hall/Garage/Fire Dept	\$760,100.00
New Chester town	Town Hall/Fire Department	\$921,478.80
New Haven town	Town Hall	\$185,070.60
Preston town	Town Hall/Garage	\$154,440.00
Quincy town	Town Hall/Garage/Fire Dept.	\$882,700.00
Richfield town	Town Hall	\$87,115.60
Rome town	Town Properties - 10 Locations	\$9,824,288.10
Springville town	Town Hall	\$340,890.00
Strong's Prairie town	Town Hall / Fire Dept	\$635,725.20
*includes insured building contents and property in the open		
Source: Local Government Insurance Policy Declarations and NCWRPC Estimates, 2019		



Town of Rome Brush Fire Unit

INTRODUCTION

Analyzing the hazards in a community is an important and critical step in the mitigation planning process. Before mitigation strategies can be determined, a risk assessment must be made. Part III of Adams County All-Hazards Mitigation Plan Update will focus on the following:

- Identification of the types of natural hazards that may affect Adams County; and
- An analysis of the hazards identified as pertinent to Adams County.

The Hazard Analysis will consist of:

- Background Information;
- History of previous occurrences of hazard events;
- An assessment of the County's vulnerability to future events; and
- An estimate of future probability and potential losses from the hazard.

HAZARD IDENTIFICATION

The process of identifying those hazards that should be specifically addressed in the Adams County All-Hazards Mitigation Plan Update was based on consideration of a number of factors. The process included a review of past hazard events to determine the probability of future occurrences and threat to human safety and property damage.

Worksheets from the Wisconsin Guide to All-Hazards Mitigation Planning were used by the planning team to evaluate and rank the listing of possible hazards to help identify which hazards should be included in the Plan Update according to threat to human safety and possible damage to property. The ranking was compared against the ranking from the previous mitigation plan update.

After review of the hazard scoring exercise results, it was determined that flooding should be the top priority since it has become a serious recurring problem for the County in recent years.

The resulting priority ranking of hazards accepted by the Committee through this report is as follows:

1. Flood/Dam Failure
2. Tornado
3. Wild Fire
4. Winter Storms/Extreme Cold
5. Hazardous Materials Incidents
6. Severe Thunderstorms/Lightning/Hail
7. Drought/Extreme Heat

This Plan Update focuses on natural hazards that have or could cause disasters that can be mitigated on a local level. Technological or manmade hazards include things like transportation incidents, civil disturbances, mass casualty events, war, and terrorism. Adams County already has action plans for these types of events, so they are not included in this planning process. Low magnitude earthquakes occur in Wisconsin every few years, but none have exceeded a magnitude of 3.9, which would have vibrations similar to the passing of a semi-truck, therefore, earthquakes are not covered in this plan. Adams County does not have avalanche, coastal hazard, hurricane, tsunami or volcano issues and conditions for landslide, subsidence or expansive soil problems are not significant in the County.

Although a significant concern, human communicable diseases are not addressed in the plan. The Adams County Health Department and area hospitals work with the Wisconsin Department of Health Services (WDHS) and the CDC to monitor and plan for these situations.

HAZARD ANALYSIS

The hazard analysis for each hazard included in this plan update is broken down into four components, as follows:

1. Background on Hazard - The next step after identifying a hazard is to define the hazard and give some general background behind it. This can include occurrence of the hazard within the County or State. This section may also give some indication of the risk to public health and safety and to personal and public property.

2. History of Hazard - Past experience of disasters is an indication of the potential for future disasters for which Adams County would be vulnerable. A review of past occurrences for each identified hazard in Adams County was completed.

Some disasters have had damages that exceeded the capabilities of local communities and state agencies. Federal assistance is then requested. Federal assistance may be offered through a variety of programs. Assistance may be directed to agricultural producers, individuals and families, businesses, or local governments. There have been 12 natural disasters in Adams where Presidential Declaration was requested from 1971-2018. They include the following:

- 1973 Flood – Disaster Declaration Approved
- 1976 Drought - Disaster Declaration Approved
- 1993 Flood - Disaster Declaration Approved
- 1994 Tornadoes - Disaster Declaration Denied
- 2000 Severe Storms/Flooding - Disaster Declaration Approved

- 2001 Severe Storms/Flooding - Disaster Declaration Approved
- 2002 Severe Storms/Flooding - Disaster Declaration Approved
- 2004 Severe Storms/Flooding/Tornado - Disaster Dec. Approved
- 2005 Cottonville Wildfire - State Disaster Fund
- 2008 Flood – Disaster Declaration Approved
- 2011 -Tornados - State Disaster Fund
- 2016 Severe Storms/Flooding - Disaster Declaration Approved
- 2018 Severe Storms/Winds/Flooding - Disaster Declaration Approved

It should be noted that this significantly underestimates the number of hazards that have occurred in Adams County. Almost every year there are significant weather events or disasters that cause thousands of dollars in damage for which no Federal disaster assistance is requested. Major indicators of hazard severity are the deaths, injuries, and economic losses resulting from natural hazards and disasters.

The National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) publish the National Weather Service (NWS) data describing recorded weather events and resulting deaths, injuries, and damages. From January 1, 1950 to December 31, 2018, NCDC reported 379 severe weather events for Adams County.

Note that since the earlier NCDC data is somewhat incomplete, this report focuses on the 10-year period from 2009 to 2018 for hazard analysis purposes. Other sources of data are used to supplement the NCDC data. These sources included other plans and reports, documents from the Adams County Emergency Management Department, past local newspaper articles, the Wisconsin Department of Natural Resources (DNR), Wisconsin Emergency Management (WEM), and the National Weather Service.

3. Vulnerability Assessment For Hazard - For each hazard identified, a summary of the impact that may be felt by the community is given. When possible, existing buildings, infrastructures, and critical facilities located in the hazard areas are identified. Critical facilities are community buildings that are especially important to the health and welfare of the population following hazard events. Examples of such facilities include hospitals, police & fire stations, town halls, and shelters.

Because this is a multi-jurisdictional plan, FEMA requires that the plan assess each jurisdiction's risks where they vary from the risks facing the entire planning area. This section of the plan will identify variations in vulnerability for specific municipalities where they occur.

4. Future Probability and Potential Dollar Losses from Hazard - The historic data and vulnerability assessment for each hazard is used to project the potential future probability of that hazard occurring in the County and the

potential damages in dollars that might be reasonably expected. This section sets the benchmark to mitigate for each hazard.

HAZARD ANALYSIS: TORNADOS

Background on Tornado Hazard:

A tornado is a relatively short-lived storm composed of an intense rotating column of air, extending from a thunderstorm cloud system. It is nearly always visible as a funnel, although its lower end does not necessarily touch the ground. Average winds in a tornado, although never accurately measured, are between 100 and 200 miles per hour, but some tornados may have winds in excess of 300 miles per hour.

Table 14 Tornado Wind and Damage Scale		
Tornado Scale	Wind Speeds	Damage
EF0	65 to 85 MPH	Some damage to chimneys, TV antennas, roof shingles, trees, and windows.
EF1	86 to 110 MPH	Automobiles overturned, carports destroyed, trees uprooted
EF2	111 to 135 MPH	Roofs blown off homes, sheds and outbuildings demolished, mobile homes overturned.
EF3	136 to 165 MPH	Exterior walls and roofs blown off homes. Metal buildings collapsed or are severely damaged. Forests and farmland flattened.
EF4	166 to 200 MPH	Few walls, if any, standing in well-built homes. Large steel and concrete missiles thrown far distances.
EF5	OVER 200 MPH	Homes leveled with all debris removed. Schools, motels, and other larger structures have considerable damage with exterior walls and roofs gone. Top stories demolished

Source: National Weather Service

A tornado path averages four miles, but may reach up to 300 miles in length. Widths average 300 to 400 yards, but severe tornados have cut swaths a mile or more in width, or have formed groups of two or three funnels traveling together. On average, tornados move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded. Tornados rarely last more

than a couple of minutes in a single location or more than 15 to 20 minutes in a ten-mile area.

Tornados are classified into six intensity categories, EF0-EF5. This scale is an updated or "enhanced" version of the Fujita Tornado Scale (or "F Scale"). The scale estimates wind speeds within tornados based upon the damage done to buildings and structures. It is used by the National Weather Service in investigating tornados and by engineers in correlating building design and construction standards against anticipated damage caused by different wind speeds.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornados, known as "Tornado Alley". Tornado Alley extends northeast from Oklahoma into Iowa and then across to Michigan and Ohio. Winter, spring and fall tornados are more likely to occur in southern Wisconsin than in northern counties. Tornados have occurred in Wisconsin every month except February.

History of Tornados in Adams County:

Adams County has had 2 verified tornados from 2009 to 2018. These tornados are documented along with 22 other historic tornados in Table 15. The most recent was on April 10 2011 when the National Weather Service confirmed that a second tornado formed near County Highway G and Buttercup Avenue to the north of where the Arkdale - Cottonville tornado had dissipated. EF1 damage was noted to homes and trees, along Buttercup Avenue as the tornado tracked into Waushara County. Several center-post irrigation systems were destroyed along with some roof damage to homes and downed power lines. Damage estimates for this tornado were approximately \$426,000.

That was the second of two tornados affecting Adams County when a cold front pushed east into Wisconsin during the late afternoon and evening hours of April 10th. Severe thunderstorms developed along the cold front and produced very large hail and three tornadoes over portions of western and central Wisconsin. The hail ranged from quarter to tennis ball size and caused extensive damage to siding and cars in the southern portions of the City of La Crosse. Damage estimates from insurance companies and contractors in the area were between 20 and 30 million dollars from the one hail storm. National Weather Service storm survey teams confirmed two EF1 tornadoes and an EF2 tornado in Juneau and Adams counties.

The Arkdale-Cottonville tornado was the National Weather Service confirmed EF2 tornado, which tracked from about three miles west of Arkdale toward County Highway G. This tornado caused extensive damage to barns, trees, power lines and houses two miles west of Arkdale. A cement silo was also knocked over. The tornado crossed Highway 21 north of Arkdale hitting nearby homes, irrigation systems and hundreds of trees. Winds were estimated around 125 mph. Several more farms, homes, and trees were hit as the tornado

continued toward the south side of Big Roche A Cri Lake near Cottonville. Several cars and mobile homes were flipped or heavily damaged. A lake association building on the southwest side of Big Roche A Cri Lake was completely destroyed and numerous center-pivot irrigation systems were twisted or destroyed across the county.

Table 15		Reported Tornadoes in Adams County						
Date	Time CST	Location	Other Counties Affected	Length (miles)	Width (yards)	Deaths*	Injuries*	F-EF Scale
4/10/11	1730	Colburn	Waushara	3.86	100	0	0	EF1
4/10/11	1712	Strongs Prairie (Arkdale) - Preston (Cottonville) - Richfield	None	17.1	800	0	0	EF2
6/7/08	1357	New Haven	Marquette	3	50	0	0	EF0
8/18/05	1641	Springville	None	1	30	0	0	F1
6/23/04	1855	Quincy, Easton, New Chester	Juneau	17	50	0	11	F1
8/27/94	2210	Plainville 1SE	None	0.1	25	0	0	F0
8/27/94	2041-2057	Monroe Center 2SE	None	10.5	850	2	22	F3
6/8/93	1635	Adams 8E	None	0.5	25	0	0	F0
6/8/93	1630	Adams 7ESE	None	2	75	0	0	F0
6/8/93	1552	Rome 1SE	None	1.5	75	0	0	F0
6/8/93	1548	Rome 2.5W	None	1	50	0	0	F0
6/8/93	1330	Brooks 1N	None	1.5	75	0	0	F0
8/29/92	1900	Big Flats 3.5E	None	5	100	0	0	F1
5/24/89	1730	Adams 5W	None	0.5	50	0	0	F0
7/10/84	1551-1553	Castle Rock	None	4	500	0	0	F2
4/27/84	1410	Brooks 3S	None	2	220	0	0	F1
7/3/83	1900	Lake Mason	None	0.1	10	0	0	F0
7/3/83	1845	Plainville	None	0.1	12	0	0	F0
7/3/83	1803	Dellwood	None	6	50	0	0	F1
7/19/80	2345	T.Quincy & T. Adams	None	2	?	0	0	F2
5/18/79	1645	southeast Adams Co.	None	0.1	35	0	0	F1
4/17/75	2145	Leola	None	0.3	20	0	0	F0
6/9/74	1430	Highway 73 & CTH 1	None	?	?	0	0	F1
5/18/71	1640	Adams-Friendship to Hancock	Waushara	15.9	100	0	5	F1
5/8/64	1815	Lyndon Station 3NW to Adams	Juneau	23.5	150	0	0	F2
6/25/34	2330	Briggsville	None	1.5	880	0	0	?
10/3/03	1600	Rome 5E	Portage	22	200	5	40	F4
Source: Storm Data, Significant Tornadoes 1680-1991 by Thomas Grazulis, WI Tornado Database 1950-2000 Geographic Techniques Report ST-WTDB01, NCDC database and Adams County EM. * Injuries and Deaths are for the entire tornado track.								

By this time the tornado had grown to nearly a half mile wide. It crossed Highway 13 at Cottonville and gradually began to weaken, hitting more seasonal homes, trees and roof tops. It dissipated south of the Colburn Wildlife Area. Damage estimates for this tornado were about \$3.3 million with 7 homes and 3 businesses destroyed.

A funnel cloud was reported on July 4, 2009 just west of Big Flats. A funnel cloud was also observed in Clark County, but neither touched down.

On June 7, 2008 an EF0 tornado hit the Town of New Haven about 2.5 miles north of Briggsville before crossing into Marquette County and strengthening to EF1. Power lines and trees were downed and some homes received minor damage. Adams County estimated about \$75,000 in damages. A warm front extending east to west across the Upper Mississippi River Valley was the focus for a significant severe weather event on June 7. A total of four tornadoes were confirmed, while numerous reports of wind damage and large hail were received from law enforcement officials and storm spotters across the state.

A tornado briefly touched down near the intersection of Highway 82 and 13 in the Town Springville August 18, 2005. One of six tornadoes that affected southwest Wisconsin, this tornado was part of an all-time one day record of 27 tornadoes hitting the state. Mobile homes were damaged, along with nearby trees and the roof of a home under construction. Damages were estimated at about \$5,000.

A line of thunderstorms that moved out of Minnesota produced wind damage, hail and several tornadoes in June of 2004. A Presidential Disaster Declaration was issued as a result. One tornado formed in eastern Juneau County, about 2 miles west of Castle Rock Dam. That tornado moved east-northeast across Castle Rock Lake and into western Adams County. It tracked near or along Edgewood Avenue with extensive tree damage in the Quincy Bluff area, including the ranger lookout tower there. Hundreds of trees were blown down from strong winds in excess of 90 mph at times. The tornado tracked east to areas just north of Edgewood Drive crossing Highway 13 approximately 5 miles south of Adams/Friendship. Downburst winds on the south side of the storm demolished at least 8 mobile homes in Edgewood Estates that were orientated north-south and took the full brunt of the cross wind. Most of the Town of Easton had extensive damage with hundreds of trees down. It continued to move east-southeast before lifting shortly before the Adams-Marquette County line about 3 miles southeast of Grand Marsh around 7:55 pm. A broad area of straight line wind damage was found south of this tornado track with widespread tree damage occurring up to 1 mile south of the track. The tornado path was approximately 17 to 18 miles in length. The tornado was rated an F1 with estimated winds in the 73 to 112 mph range.



2004 Tornado Damage

Adams County reported that 11 people were injured including 2 that required airlifting to UW-Madison Hospital. A total of 16 homes were destroyed along with 41 having major damage and another 67 with minor damage. Governmental expenses exceeded \$500,000. Private sector damage were estimated at about \$6.5 million primarily agricultural including entire farms and many irrigation systems and other equipment as well as crops.

In August of 1994, a F3 tornado tore a 13-mile long, $\frac{1}{4}$ wide swath through Adams County. Two people were killed and 22 people injured by this tornado. Damage was estimated at \$4.5 million with 24 homes, a tavern, a potato warehouse, and numerous out buildings destroyed. Eight homes suffered major damage, and 160 were reported to have light to moderate damage, primarily in the Town of Big Flats. In addition, the Big Flats Fire Department and town hall were destroyed, as well as a thrift shop. Seventy cows were crushed to death in one barn as the walls blew out and the upper floor, filled with 16,000 bales of hay and roof collapsed. Presidential Disaster Declaration was not issued for this event.

The largest and deadliest tornado recorded in Adams County occurred a century ago in 1903 in the Town of Rome. A large F4 tornado apparently formed over northern Adams County and then moved east-northeast passing 1.5 miles south of Bancroft in Portage County. The tornado was up to a half mile wide but most of the damage was in Portage County. Five people were killed and forty were injured by this tornado.













Only the 1994 and 1903 tornados have caused deaths, however several others have caused significant damages. The July 10, 1984, a F2 tornado that touched down in the Dellwood subdivision near Castle Rock Lake hit 59 homes and destroyed 14. More than 2,000 trees were downed.

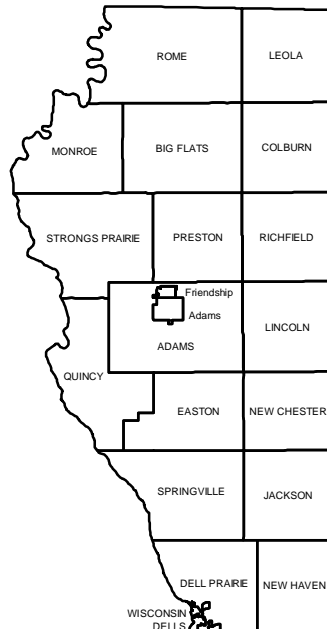
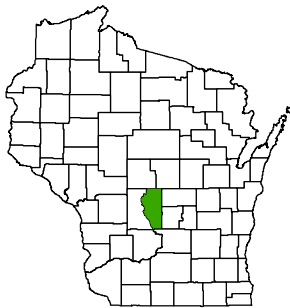
Tornado Vulnerability Assessment:

Though Adams County is mostly a rural county, there are concentrations of population scattered throughout. Subdivisions, rural unincorporated communities, and the Adams/Friendship area can be regarded as more vulnerable because these areas pose more of a threat to human safety and property damage in more concentrated areas. Map 8 illustrates these areas with in the County.

Mobile homes are of significant concern in assessing the hazard risks from tornados. In general, it is much easier for a tornado to damage and destroy a mobile home than standard constructed houses and buildings. Since 25 percent of Adams County's housing units are mobile homes, vulnerability to health and safety along with property damage is much greater. Research by the NWS shows that between 1985 and 1998, 40 percent of all deaths in the nation from tornados were in mobile homes, compared to 29 percent in permanent homes, and 11 percent in vehicles.

Legend

-  State Highways
-  County Highways
-  Railroad
-  Minor Civil Divisions
-  County Campgrounds
-  Boy Scout Summer Camp
-  Correctional Facility
-  Mobile Home Parks
-  Water
-  Parcel Improvements
-  High Density
-  Low Density



Source: WIDNR, NCWRPC, Census 2010, NHGIS

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

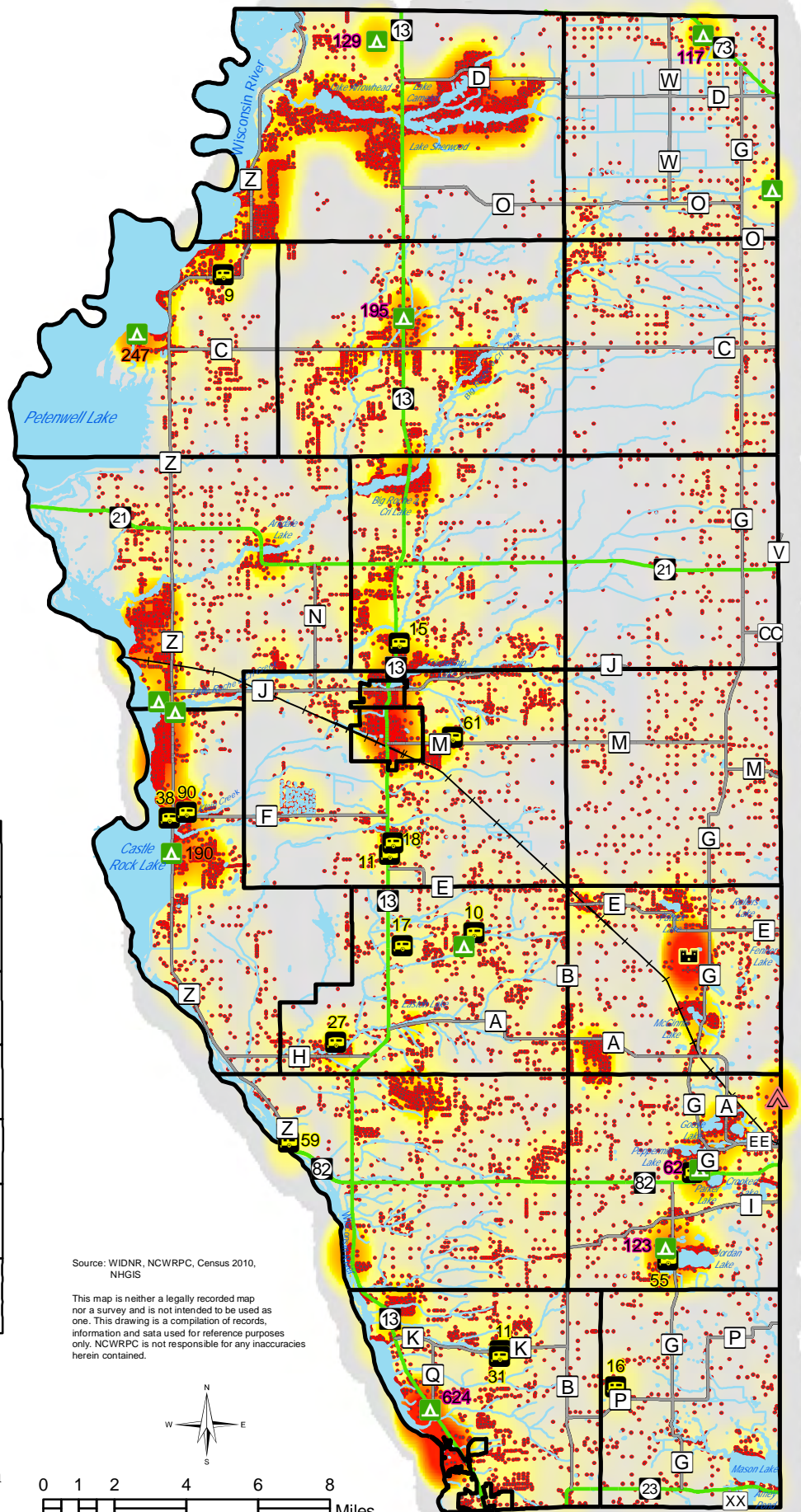


Prepared By:
**North Central
Wisconsin Regional
Planning Commission**

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org



0 1 2 4 6 8
Miles



The 2010 U.S. Census reported there are 4,380 mobile homes in Adams County. While mobile homes are scattered throughout the County, many are concentrated in mobile home parks. Map 8 also displays the location of the mobile home parks with approximate number of units.



Foster Trailer Park Tornado Damage

In addition to mobile homes, there are many other areas vulnerable to tornados such as campgrounds. Like mobile homes parks, campgrounds are of concern in the County because often times there is a concentration of people in them and there is little shelter provided. Map 8 also shows the location of campgrounds in the County.

The following is a list of things that may be affected by a tornado. Much of this list can be referenced in Part II.

- Community facilities – hospitals, schools, "prisons/jails"
- Public Service - police and fire departments
- Utilities - power lines, telephone lines, radio communication
- Transportation – debris clean-up
- Residential – nursing homes, mobile home/parks, garages, trees and limbs, siding, windows
- Businesses – signs, windows, siding, billboards
- Agricultural - buildings, crops, livestock

Based on review of the historic events of tornados, there are no specific areas in the county that have unusual risks. The events are relatively uniform and a countywide concern. However, during the City/Village Planning Meeting for this Plan Update, both the City of Adams and the Village of Friendship identified tornados (severe winds) as a major vulnerability concern due to the potential for power outage and resulting impact on municipal services and the population itself (heating/cooling, food & water safety).

Future Probability and Potential Dollar Losses – Tornados:

Based on the historic data presented here (frequency of past events), Adams County can expect a tornado about once every 5 years on average. This equates to a probability of 0.2 or about a 20 percent chance in a given year. Table 13 indicates the probability of tornados of a specific magnitude. There was a trend of a major damaging tornado event (over \$2 million in damages) every 10 years: 1984, 1994, 2004 until 2011 when the Arkdale-Cottonville EF2 came early.

Historic data is again used to estimate potential future dollar losses due to tornado. Estimated damages resulting from various tornados in Adams County range from \$0 to \$7 million. On average, Adams County might expect damages of \$1.8 million per tornado based on the study period of 2009 to 2018. However,

going back to 1971, only four of these 24 historic tornados resulted in damages exceeding \$1 million, three others had \$250,000+, and the rest were \$25,000 or less. Over the next ten-year period, tornado losses in Adams County could approach \$3.6 million.

Table 16 Probability of Intensity for any given Tornado in Adams County						
Tornado Scale	F/EF0	F/EF1	F/EF2	F/EF3	F/EF4	F/EF5
Number of Reported Tornados*	11	9	3	1	0	0
Probability of Occurrence	46%	37%	12%	4%	<1.0%	<1.0%
<i>Source: Nat'l Weather Service & NCWRPC – *Based on historical data from 1971 to 2018.</i>						

HAZARD ANALYSIS: WINTER STORMS / EXTREME COLD

Background on Winter Storms/Extreme Cold Hazard:

A variety of weather phenomena and conditions can occur during winter storms. For clarification, the following are National Weather Service approved descriptions of winter storm elements:

Heavy snowfall – the accumulation of six or more inches of snow in a 12-hour period or eight or more inches in a 24-hour period.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.

Winter storms can vary in size and strength and include heavy snowfall, blizzards, ice storms, freezing drizzle/freezing rain, sleet, wind chill, and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death.

True blizzards are rare in Wisconsin. They are more likely to occur in the northwestern part of the state than in south-central Wisconsin, even though

heavy snowfalls are more frequent in the southeast. However, blizzard-like conditions often exist during heavy snowstorms when gusty winds cause the severe blowing and drifting of snow. Heavy snow and ice storms have been part of nearly every winter in Adams County.

Dangerously cold conditions can be the result of the combination of cold temperatures and high winds. The combination of cold temperatures and high wind creates a perceived temperature known as "wind chill". Wind chill is the apparent temperature that describes the combined effect of wind and air temperatures on exposed skin. When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. When all factors are the same, the faster the wind blows the greater the heat loss, which results in a colder feeling. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The National Weather Service issues wind chill advisories when wind chill readings of -20 to -34 degrees are expected. Wind chill warnings are issued when wind chill values are expected at or below -35 degrees. Extreme cold events are most likely during the months of January and February.

History of Winter Storms/Extreme Cold in Adams County:

The NCDC has reported 29 major winter events for Adams County between 2009 and 2018. All of these events contained some form of cold, snow, sleet, freezing rain, or ice conditions.

Most recently, on December 31, 2018, parts of western Wisconsin received heavy snow with totals of 6 to 7 inches common across Richland, Juneau and Adams and Counties. Volunteer snow observers reported around 6 inches of snow across the southern two-thirds of Adams County. The highest reported total was 6.8 inches near White Creek. The precipitation started as a short period of freezing drizzle that lasted long enough to create a glaze of ice on untreated or elevated surfaces.

On February 10, 2013, the NCDC reported one person was killed in a two vehicle accident on State Highway 82 in the Township of Jackson. The accident occurred as a result of icy roads from freezing rain that was occurring at the time.

Blizzard conditions present some of the most severe winter weather the County can face. Over the period of analysis, 2009 - 2018, there have been 2 blizzard reports by NCDC, occurring in 2012 and 2010.

A strong area of low pressure moved out of the Central Plains into Illinois and the Great Lakes region on December 19th and 20th of 2012. As this storm moved by, it produced a period of blizzard conditions during the morning and afternoon of the 20th as sustained north winds of 25 to 35 mph with higher gusts created

poor visibility from falling and blowing snow. Impacts from the blizzard included closed roads, trapped vehicles, power outages, region wide school closings on the 20th with some schools remaining closed on the 21st or started 2 hours late. The Governor issued an executive order declaring a state of emergency before the storm hit. This placed the state emergency management, National Guard, State Patrol and other state and county agencies on high alert.

The accumulating snow started in southwest Wisconsin during the middle of the evening on the 19th, reaching central Wisconsin in the early morning hours of the 20th. Accumulations reached winter storm criteria of 6 inches between midnight and 7 a.m. on the 20th. Two bands of heavy snow, with accumulations of 10 or more inches, occurred. The first was from Grant County northeast through Richland County into the southern sections of Adams and Juneau Counties. Within Adams County, the highest reported snow total was 11.0 inches in the Town of Adams. The second band was across northern Buffalo and Trempealeau Counties into northwest Jackson and southwest Clark Counties. The highest reported snow total in the southern band was 14.5 inches in Grant County with 15.0 inches in the northern band in Trempealeau County. National Guard troops were used to help rescue stranded drivers.

In December 2010, a powerful low pressure system tracked across the Upper Midwest and Great Lakes region during the evening hours of December 10th into the morning hours of December 12th. This storm brought heavy snow and blizzard conditions across portions of western and central Wisconsin. Snowfall amounts of 19.9 inches were measured at Friendship. In addition to the heavy snow, sustained wind speeds of 25 to 30 miles per hour with gusts up to 50 miles per hour caused whiteout conditions, widespread road closures, stranded motorists and power outages.

The winter of 2007-2008 was one of the worst on record for Adams County with 97.4 inches setting a seasonal snowfall record. The NCDRC had nine heavy snow/winter storm reports including blizzard conditions on February 17, 2008 which resulted in 11.2 inches of snow at Friendship.

On December 20-21, 2004, the northern 1/3 of the County sustained a power outage due to a winter storm. A power substation in Wood County failed leaving 5,100 customers in the Towns of Big Flats and Rome without power with temperatures below zero. Most had power restored in about a day, but 700 were without power for two days. Critical facilities affected by the outage included the Town of Rome Police and Fire Stations. This event required opening of the County EOC, Red Cross and Salvation Army shelter operations and door-to-door notification/transportation for elderly.

In February of 2001, Adams County was hit by consecutive ice storms. The first period of freezing rain produced a widespread coating of 1/4 to 1/2 inch of ice, which was followed by 1 to 3 inches of snow accumulation. This caused

hazardous traveling conditions, but law enforcement officials reported only minor accidents. The second period of freezing rain affected southwest and central Wisconsin. Even though glazing was widespread, with ice accumulations of 1/4 inch, law enforcement officials reported only minor automobile accidents.

Arctic cold outbreaks are common in the upper Midwest and sub-zero readings occur 22 times per winter on average. Occasionally strong northwest winds will combine with cold outbreaks to create dangerous wind chill conditions. The coldest temperatures are usually in January and February with average lows in the single digits and record lows colder than -25 degrees. The all-time record low in Adams County is -43 degrees (actual) set in 1951. The NCDC reports 7 extreme cold events between 2009 and 2018.

Most recently, Arctic air spread into western and central Wisconsin on the morning of January 17th, 2016 producing wind chills of -35 in Friendship. In another example from 2014, dangerous wind chills of 35 below or colder occurred across western Wisconsin and Adams County from the early morning of January 27th into the morning of the 28th. The lowest recorded wind chill in Adams was 40 below from the Mesonet reporting station in Friendship, and 46 below was observed at Black River Falls. All the schools across western Wisconsin were closed on both January 27th and 28th.

A cold spell hit the region to start the year in January of 2010 with temperatures below zero for several days and extremely low wind chills at times. It was the coldest first few days of a January since 1979 and one of the coldest starts to the New Year in history with average temperatures just above zero. Wind chills were well below -30 on January 2nd. The year prior, an arctic cold front over southern Canada moved southeast into the Ohio River valley in the evening hours of January 14, 2009. This brought bitterly cold temperatures and wind chills across portions of southwest and central Wisconsin in the evening hours of the 14th through the morning hours of the 16th. Wind chill values ranged from -33F in Jackson county to -42F in Grant county. Although unofficial, the lowest wind chill value of -43F was observed at Friendship in the morning hours on January 15th.

The wind chill at Friendship hit -44 degrees on January 30, 2008. An arctic cold front moved across southwest and central Wisconsin on January 29. Very cold temperatures and strong northwest winds combined to produce dangerously cold wind chill values between 30 below and 45 below during the night and mainly into the morning hours of January 30.

Winter Storms / Extreme Cold Vulnerability Assessment:

Winter storms present a serious threat to the health and safety of affected citizens and can result in significant damage to property. Heavy snow or accumulated ice can cause the structural collapse of buildings, down power lines, motor vehicle accidents or isolate people from assistance or services.

The following is a list of things that may be adversely affected by a winter storm. Much of these community assets can be referenced in Part II.

- Infrastructure – operation of emergency services, operation of public facilities and schools
- Utilities – down power and telephone lines
- Transportation – automobile accidents, roadway plowing, salting/sanding
- Residential – roofs
- Businesses – commerce
- Agricultural - livestock

Based on review of the historic events of winter storms and extreme cold, there are no specific areas in the county that have unusual risks. Winter storms cover a broad area and are a region-wide concern. However, during the City Planning Meeting for this Plan Update, the City of Adams identified winter snows and in particular ice storms as a major vulnerability concern due to the potential for power outage and resulting impact on municipal services and the population itself (heating, food & water safety).

The extreme cold weather can affect the entire county. The risk to public health includes the chance of getting frostbite and hypothermia, and motor vehicle accidents. Everyone is at risk for becoming injured in extreme cold weather, either because of a frail body or because of travel in a motor vehicle.

Future Probability & Potential Dollar Losses – Winter Storms/Extreme Cold:

Based on historical frequency, Adams County can expect 2.9 significant winter storms per year on average. In other words the probability is 1.0 or a 100 % chance in a given year. For extreme cold temperatures, based on historical frequency, Adams County can expect an occurrence about every 1.4 years, on average, for a probability of 0.7 or a 70% chance in a given year.

Estimating potential future losses for winter storms is difficult. Damages and losses are typically widespread. Auto accidents and additional snow removal time are typical impacts of winter storms, and such claims are not aggregated or tracked for monetary damage. About 189 annual motor vehicle accidents occur with snow/ice/slush road conditions, and produce about 71 injuries and 1.4 deaths annually. Winter storms do have the potential to be extremely destructive, particularly in the case of ice storms. Potential future losses per incident might range from \$5,000 to \$2 million based on experiences from other counties.

HAZARD ANALYSIS: FLOODING/DAM FAILURE**Background on Flood Hazard:**

There are a variety of classifications for flooding including coastal, dam or levee failure, flash, lake, riverine, stormwater and urban/small stream. Adams County has the potential for all these types except coastal. The following descriptions of the types of flooding are compiled from various FEMA and other notable hazard planning sources:

Coastal – Different from other types of flooding which relate to movement of water through a watershed, coastal flooding is due to the effect of severe storm systems on tides resulting in a storm surge. Primarily known as an ocean-based event, the Great Lakes coastal areas can also be affected.

Dam or levee Failure – More of a technology related hazard than a natural hazard, various factors can result in the failure of the structural technology that is a dam, thus causing flooding of areas downstream of the dam often similar in effect to flash flooding.

Flash – Involves a rapid rise in water level moving at high velocity with large amounts of debris which can lead to damage including tearing out of trees, undermining buildings and bridges, and scouring new channels. Dam failure, ice jams and obstruction of the waterway can also lead to flash flooding. Urban /built-up areas are increasingly subject to flash flooding due to removal of vegetation, covering of ground with impermeable surfaces and construction of drainage systems.

Lake – Prolonged wet weather patterns can induce water-level rises that threaten lakeshore areas.

Riverine – Also known as overbank flooding, this is the most common type of flooding event. The amount of flooding is a function of the size and topography of the watershed, the regional climate, soil and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods.

The cause of flooding in rivers is typically prolonged periods of rainfall from weather systems covering large areas. These systems may saturate the ground and overload the streams and reservoirs in the smaller sub-basins that drain into larger rivers. Annual spring floods are typically due to the melting of snowpack.

Stormwater – Water from storm event that exceeds the capacity of local drainage systems, either man-made or natural, can result in flooding. Inadequate storm sewers and drainage systems are often the primary factor resulting in this type of flooding.

Urban and Small Stream – Locally heavy rainfall can lead to flooding in smaller rivers and streams. Streams through urban or built-up areas are more susceptible due to increased surface runoff and constricted stream channels.

Major floods in Adams County tend to occur in the spring when melting snow adds to normal runoff and in summer or early fall after intense rainfalls. Flooding occurs in the spring due to snowmelt and frozen soil. This build up continues until the river or stream overflows its banks, for as long as a week or two and then slowly recedes inch by inch. The timing and location of this type of flooding is fairly predictable and allows ample time for evacuation of people and protection of property.



Adams County Highway Washout

Flooding is a significant hazard in Adams County, particularly because it borders the Wisconsin River. As described in Part II, there are approximately 235 miles of streams in Adams County within five main watersheds. Four are part of the Wisconsin River Basin, while the Neenah Creek Watershed is part of the Upper Fox River Basin.

Floodplains exist along the Wisconsin River and the tributaries that feed into it. These floodplains are narrow along tributaries and lakes but extensive throughout the County. Floodplains are described in Part II and shown on Map 4 of this plan. The Federal Emergency Management Agency (FEMA) identifies these floodplains on Digital Flood Insurance Rate Maps (DFIRMs) as downloaded by the NCWRPC from FEMA's website.

There are 52 dams in Adams County (See Map 3 and Table 17). These dams serve many useful purposes including agricultural uses, providing recreational areas, electrical power generation, erosion control, water level control and flood control. According to the DNR, Adams County has 18 large dams (including Castle Rock and Petenwell Dam), which have a structural height of over 6 feet and impounds 50 acre-feet or more. The other 34 are regarded as small dams. The Wisconsin DNR regulates all dams on waterways to some degree; however the small dams are not stringently regulated for safety purposes. The federal government has jurisdiction over large dams that produce hydroelectricity. Castle Rock and Petenwell Dams are the major producers of hydroelectricity in Adams County. Friendship and Big Roche-A-Cri also produce electricity.

Table 17		Dams in Adams County			
DAM NAME	DAM SIZE TYPE	MILES NEXT CITY IS DOWN FROM DAM	NAME OF NEXT CITY DOWN FROM DAM	HAZARD RATING	UPDATED EAP YEAR
CASTLE ROCK	LARGE	19	WISCONSIN DELLS	HIGH	2019
LAKE CAMELOT	LARGE	0	LAKE SHERWOOD SUBDIV	HIGH	2003
LAKE PETENWELL	LARGE	1	DELLWOOD SUBDIVISION	HIGH	2019
PEPPERMILL LAKE (Coddington)	LARGE	4	OXFORD	LOW	2010
SHERWOOD	LARGE	0	LAKE SHERWOOD SUBDIV	SIGNIFICANT	2003
ARKDALE	LARGE	0	ARKDALE	LOW	2000
COOL CREEK 1 (Bingham Cr 1 Cecil Brown Etux)	SMALL	35	WISCONSIN DELLS	LOW	
CARTER CREEK (Splitek)	LARGE	0	NONE	LOW	
EASTON	LARGE	0	EASTON , CTH A	LOW	2010
FARREY (McGinnis Lake)	LARGE	2	BROOKS	LOW	2010
FEDLER	LARGE	0	NONE	LOW	2018
FRIENDSHIP	LARGE	0	FRIENDSHIP	SIGNIFICANT	2018
HORNER (Fawn Lake)	LARGE	0	NONE	HIGH	2017
LAKE ARROWHEAD	LARGE	0	ROME	LOW	2003
LANDIS, CHARLES	SMALL	9	FRIENDSHIP	LOW	
LAVERNE NEWBY (White Creek)	SMALL	1	WHITE CREEK	LOW	
LEOLA 15 (Possible Abandoned?)	LARGE	17	NEW ROME	LOW	2014
LEOLA 19	SMALL	15	NEW ROME	LOW	
LEOLA 8	SMALL	12	NEW ROME	LOW	
LEOLA 2	SMALL	17	NEW ROME	LOW	
LEOLA 12	SMALL	15	NEW ROME	LOW	
LEOLA 7	SMALL	13	NEW ROME	LOW	
LEOLA 6	SMALL	12	NEW ROME	LOW	
LEOLA 5	SMALL	13	NEW ROME	LOW	
LEOLA 3	SMALL	15	NEW ROME	LOW	
LEOLA 14	SMALL	16	NEW ROME	LOW	
LEOLA 16	SMALL	18	NEW ROME	LOW	
LEOLA 17	SMALL	14	NEW ROME	LOW	
LEOLA 18	SMALL	14	NEW ROME	LOW	
LEOLA 20	SMALL	16	NEW ROME	LOW	
LEOLA 22	SMALL	17	NEW ROME	LOW	
LEOLA 23	SMALL	15	NEW ROME	LOW	
LEOLA 24	SMALL	16	NEW ROME	LOW	
NORTHERN DAM OR #9 (White Creek)	LARGE			LOW	2014
ROCHE-A-CRI/COTTONVILLE (Big Flats)	LARGE	4	ARKDALE	HIGH	2004
SCHWAHN	LARGE	0	NONE	LOW	2018
WALKER, HARRY	LARGE	9	PLAINFIELD	LOW	
COOL CREEK 2 (Bingham Cr 2 Cecil Brown Etux)	SMALL				
EVANS, ORVEL	SMALL				

Table 17 Continued	Dams In Adams County				
HENNING, H.A.(?)	SMALL				
RAMSTEIN (Henry Reeves, Etux)	SMALL				
HOLM, HAROLD	SMALL				
HYLER, DONALD	SMALL				
MANTEUFEL (John Kish & Ed Kubacki)	SMALL				
KOHL, KARL	SMALL				
RANDORF, CLAYTON	SMALL				
RICHARD E BIERI (Joe Lake)	SMALL				
SCIEPKO, JOSEPH	SMALL				
SUS, EDWARD	SMALL				
BOEHM DAM	SMALL			LOW	
PIERCE DAM	SMALL				
VAN ERT DAM	SMALL				
Source: DNR on-line database & NCWRPC, 2019					

A dam can fail for a number of reasons such as excessive rainfall or melting snow. It can also be the result of poor construction or maintenance, flood damage, weakening caused by burrowing animals or vegetation, surface erosion, vandalism or a combination of these. Dam failure can happen with little warning resulting in loss of life and significant property damage in an extensive area downstream of the dam.

The WDNR assigns hazard ratings to large dams within the state. When assigning hazard ratings, two factors are considered: existing land use and land use controls (zoning) downstream of the dam. Dams are classified into three categories that identify the potential hazard to life and property downstream should the dam fail. A high hazard indicates that a failure would most probably result in the loss of life. A significant hazard indicates a failure could result in appreciate property damage. A low hazard exists where failure would result in only minimal property damage and loss of life is unlikely. For Adams County, there are six dams that have a high hazard rating: Castle Rock, Camelot, Horner (Fawn Lake), Roche-a-Cri, Northern Dam/#9 (White Creek) and Petenwell. Friendship and Sherwood have a significant rating, while the rest are rated low.



Friendship Dam

History of Flooding in Adam County:

Flooding is a significant hazard of concern in Adams County, being a principal cause of damage in nine of ten Presidential Disaster Declarations that included Adams County from 1971 to 2018. The most recent declaration as of this plan

occurred in 2018. NCDC has reported 8 flood events for Adams County over the study period between 2009 and 2018.

On August 27, 2018, a line of severe thunderstorms moved across western Wisconsin during the evening. Runoff from the heavy rains produced flash flooding across the southern sections of Adams County. County Highway G was closed because of flooding along Big Spring Creek and water was over County Highway H near White Creek. Additional township roads were closed or had water over them.

The storms dumped excessive amounts of rain from southern La Crosse County and northern Vernon County east across the southern sections of Monroe, Juneau and Adams Counties. Numerous roads were closed because of flooding or mudslides, homes had to be evacuated with several water rescues were performed. The eastbound Amtrak Empire Builder had to be halted near Tomah because of a washout on the rail line near Mauston (Juneau County). In Monroe and Vernon Counties, four earthen flood control dams failed and seven others sustained damage. Rainfall totals of 6 to 10 inches were common in this heavy rain band with the highest reported totals being 9.98 inches near Westby (Vernon County). The runoff later produced historic flooding on the Kickapoo River with several record flood crests established. Damages in Juneau County exceeded \$22 million of which \$6.5 million was from Elroy. Tornado and straight-line wind damage accompanied the flooding with this storm. The Governor declared a state of emergency for the entire state. A federal disaster declaration was made for La Crosse, Monroe, Juneau, Adams, Vernon, Crawford and Richland Counties.

In 2016, flooding occurred as several rounds of thunderstorms with heavy rain moved across southwest Wisconsin from the morning of September 21st into the morning of the 22nd. Runoff from the heavy rain caused flood waters from Big Spring Creek to washout a section of County Highway G northwest of Big Spring. Flood waters from Big Spring Creek also covered County Highway P near Big Spring. Flooding elsewhere in the county damaged three homes. The rain resulted in flash flooding across portions of Adams, Clark, Crawford, La Crosse, Monroe, Richland, Vernon and Trempealeau Counties. The Governor declared a state of emergency for Adams, Clark, Crawford, Jackson, La Crosse, Monroe, Richland, Trempealeau and Vernon Counties, and a federal disaster declaration was subsequently made for Adams, Clark, Crawford, Jackson, Juneau, La Crosse, Monroe and Vernon Counties.

In June 2008 another disaster declaration included most of southern Wisconsin. Heavy rain resulted in flooding that caused numerous road and culvert washouts throughout the southern half of Adams County. Crop losses and water damage to homes and outbuildings including mold problems were significant. Public sector damages exceeded \$400,000, and individual losses have exceeded

\$300,000. High wind including a tornado in the Town of New Haven was also associated with this event.

In 2004, severe storms resulted in flooding and a disaster declaration for central and southern Wisconsin including Adams County. Flash flooding occurred after 3 to 6 inches of rain fell within two hours. High water conditions persisted for some time after the initial flood. Several roads were impassable. Approximately 40 homes were damaged along with a number of government facilities throughout the County. NCDC reported property damages of \$125,000 and crop damages of \$25,000.

In 2002, at least 15 inches of rain fell in northern Adams County on June 21 and 22. The disaster declaration covered eight Wisconsin counties including Adams. Numerous roads were reported closed due to flooding. The risk of a dam failure was issued for areas along Lake Arrowhead, Lake Sherwood and Lake Camelot drainages. Runoff filled lakes to the point of nearly breaching the levees and embankments. Water had to be released into the drainage system to prevent levee and dike failures. In some locations, the water flooded homes and businesses, washed out roads, bridges and culverts, and damaged crops. Estimated damage by NCDC to Adams County was about \$577,000. The Town of Big Flats suffered major damage to roads, resulting in more than \$195,000 in repair costs.

Severe storms again resulted in flooding (and disaster declaration) in 2001 and 2000.

The Flood of 1993 was one of the worst flood events experienced by Adams County, the state, and entire Midwest. The flooding in Adams County was a result of several compounding factors including heavy rains and flooding in the fall of 1992, above average amounts of precipitation in the Spring of 1993, and unusually heavy amounts of rain onto already saturated ground from early June throughout July. Fortunately, before the flood peaks arrived on the Wisconsin River in Adams County, the Petenwell and Castle Rock Reservoirs were drawn down. This created additional storage capacity that helped ease flow and lowered discharges downstream.

East of the Wisconsin River in the County, there was substantial flooding reported near the border of the City of Adams and the Village of Friendship. The Health and Social Services Building, DNR Offices, Jr. High School, and numerous homes all experienced flooding and water damage. Standing water plagued the area for months afterward. Adams County received approximately \$792,562 in disaster disbursements. The major impacts from flooding were to agriculture lands public roadway washouts. Nearly 50 percent of financial aid disbursements were for agriculture where wet croplands prevented normal farming operations and stunted or killed crops. Twenty percent of the funds were for public relief. High groundwater eroded road bases and caused excessive

runoff that washed out culverts and embankments or stripped gravel surfaces off of town roads. In the private sector, the three most common problems were groundwater in basements, failing septic systems, and polluted wells.

Major flooding also occurred in 1973 affecting a large portion of the county with flooding along the entire length of the Mississippi River resulting in a disaster declaration. Flood crest at Wisconsin Dells was 20.7 feet compared to 18.2 feet in 1993. Other notable flooding includes 1967 and 1965 with crests measured at Wisconsin Dells of 19.2 and 19.0 feet respectively.

Prior to the construction of the reservoirs at Petenwell and Castle Rock, large-magnitude floods were recorded on the Wisconsin River in September 1911, July 1912, September 1938 and September 1941. A maximum discharge of 72,200 cubic feet per second (cfs) was recorded on September 14, 1938, on the Wisconsin River near Wisconsin Dells just south of the Adams County line.

Adams County has not experienced a dam failure with any loss of life or substantial property damage. However, there have been notable incidences of threatened failure. The Town of Rome avoided dam blowouts with the help of many volunteer sandbaggers during the June 2002 flooding when the Lake Camelot dam came within an inch of failure; Lake Arrowhead dam came within seven inches of failure; and Sherwood was about four inches away from failure.

In 2006, the Tri-Lakes dams were again threatening failure. The Kingsway Dam on Upper Lake Camelot is the uppermost dam in a series of dams. Failure of this dam could ultimately lead to failure of 3 other dams downstream and close State Highway 13 as well as various County and local roads. Rapid draw down of the lakes prevented the dam failure and allowed repair of a failing drain system.

In 2007, a bowed and leaking stop log at the base of the Easton Lake Dam required draw down and emergency repair. The dam was built in the 1860s to form a 24-acre millpond. During the repairs, other issues were revealed, and full replacement of the dam was subsequently planned.

Flood Vulnerability Assessment:

Flood events in the County have caused substantial property and infrastructure damage in the past and have the potential to cause future damage, since a significant number of structures still exist in the floodplain. Looking at past events, the following have been significantly impacted by flooding:

- Infrastructure – flooded public facilities and schools
- Utilities - down electric lines/poles/transformers, telephone lines, lost radio communication
- Roadways – washouts, inundated roadways, debris clean-up
- Residential structures – flooded basements, damaged septic systems
- Businesses – loss of commerce

- Agriculture - inundated cropland

To assess the vulnerability of the Adams County area to flooding hazards, basic inventory data described in Part II must be analyzed. For this purpose, consideration should be given to structures (specifically critical facilities), infrastructure, and cropland.

One of the first reports to reference in assessing vulnerability to structures during flooding is the Wisconsin Repetitive Loss Report. The Repetitive Loss Report provides information to the status of repetitive loss properties by community. FEMA classifies a repetitive loss structure “when more than one flood insurance claim of at least \$1,000 is made within a ten-year period”. The information is used as a floodplain management tool and to supplement information provided by communities for flood mitigation grants administered by WEM. According to the report, there are no repetitive loss structures within Adams County.

Since no structures are listed in the Repetitive Loss Report, structures within floodplains were analyzed, see methodology outlined below. The floodplain boundaries within Adams County are shown on Map 4. Table 18 shows the number of structures in each municipality identified as “vulnerable to flooding” according to proximity to floodplains. There were a total of 828 structures identified in the designated floodplain boundaries, see Map 9.

Methodology – Structures within Floodplains:

1. NCWRPC downloaded the new DFIRM floodplain maps from the FEMA website into a GIS coverage for the County.
2. A building point cover was digitized from current digital aerial photography of the floodplain areas.
3. The floodplain coverage was then combined with the building point coverage to identify those structures within the floodplain boundary.
4. Total structures with the floodplain were then tabulated by municipality.
5. Land records data was used to determine the total value for the identified vulnerable structures by municipality.

Flooding in Adams County is often felt beyond the floodplain boundaries due to factors such as topography and high groundwater. The drainage (surface runoff) network in the County is poorly defined. During periods of extended rainfall and/or snowmelt, a general condition of flooding exists throughout the communities. During this time, basements and roadways suffer considerable damage.

Table 18 2019 Improvement Values for Structures in Floodplains in Adams County		
Municipality	Number	Average Value
Adams town	3	\$222,500
Big Flats town	22	\$1,292,100
Colburn town	1	n/a
Dell Prairie town	71	\$6,064,500
Easton town	95	\$4,211,200
Jackson town	27	\$1,992,000
Leola town	20	\$1,074,400
Lincoln town	0	\$0
Monroe town	5	\$339,500
New Chester town	1	n/a
New Haven town	80	\$7,008,800
Preston town	59	\$5,744,600
Quincy town	131	\$7,879,300
Richfield town	3	\$209,900
Rome town	196	\$24,254,100
Springville town	94	\$2,579,600
Strongs Prairie town	17	\$1,656,500
Friendship village	3	\$128,900
Wisconsin Dells (part)	n/a	n/a
Adams city	0	\$0
Adams County	828	\$64,959,900
<i>Source: Adams County Land Records and NCWRPC, 2019</i>		

In addition to structural damage from flooding, there would be significant damages to public roadways, particularly to roadway surfaces, culverts and bridges. Flooding would inundate or close roadways due to washouts from a period of a few days up to as much as three months. Such interruptions in the County transportation network cause travel delays through detours. Businesses are often impacted by this restriction in access.

Businesses can be forced to close due to septic system problems and other issues resulting from flooding and the high water table. Tourism is an important industry in the County and several campgrounds, lodges, and restaurants may be affected by flooding.

The agriculture industry is a sector that can face substantial losses during a flood. Flood conditions can leave farmers with the following economic setbacks:

- Delayed planting (reduced growing season)
- Prevention of fields from being seeded
- Seed and agricultural chemicals washing out of fields

- Rotting of plants due to excess moisture
- Areas where planted crops left in the fields due to excessive moisture
- Crops not reaching full maturity or stunted growth
- Requirements by farmers to expend higher amounts of money on additional soil amendments
- Lower quality (nutritional value) of harvestable crops as a feed source.

Reductions in quantity can result in loss of revenues from cash crops and increased expenses for purchasing the needed livestock feed from outside sources. Additionally, reductions in crop quality result in lower prices received for cash crops and increased amounts spent for nutritional supplements to animal feed, which need to be added even in much of the purchased feed.

Economic losses to farmers can generate a ripple effect to the local community as well. Reduction in farm income will curtail the farmers' ability to purchase new equipment and make other improvements. Farmers will have less money to spend at farm dealers, farm supplies, building/hardware suppliers, fertilizer, feed and seed dealers, and other agribusiness and retail establishments. The State itself will have reduced tax revenues. Farmers will have less money to save and invest, and suffer still more increases in debt load.

The forest products industry is affected similarly to agriculture. Forestlands become too wet for logging operations and many water logged tree plantations suffer high mortality rates. Mill inventories become very low, resulting in increased prices for consumers.

The areas considered to have a higher risk for impact from flooding include those communities with structures in floodplains as shown in Map 9. In addition, the Village of Friendship identified flooding and more specially dam failure as a primary concern during their mitigation planning meeting.

Adams County Flooding Status Report 2016 - 2019

Continuous rainfall and high groundwater has caused significant, on-going flooding throughout the County. Refer to Map 10.

Rain and rapid snow melt on March 13-14, 2019, resulted in numerous roads/culverts damaged throughout the County. This included both county and municipal roads. Adams County Emergency Management assisted the County Highway Department and several towns including Big Flats, Easton, Monroe, New Chester, Richfield, Springville and Strongs Prairie, in applying for funding assistance for those damages through the Wisconsin Disaster fund and Department of Transportation Disaster Damage Aids program. Some roads remained closed for an extended period of time across the County, and it was difficult to find contractors to do the repair work because the extensive demand around the state.

This flooding also caused damage to numerous homes. Damage reports from residents were widespread throughout the County, but the majority of the reports coming in between March and April of 2019 were located in the central and southern parts of the County.

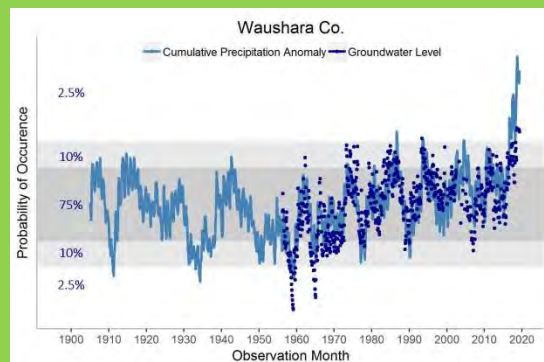


Frequent rain events continuing through Spring and into the Summer of 2019 did not allow the groundwater time to go down, and this resulted in even more flooding to roads and residences from May well into Fall. The majority of these reports are coming from the following areas: towns of

Adams, Big Flats, Easton, Jackson, Monroe, Preston and Strongs Prairie.

It is anticipated that the Spring of 2020 will be more of this same pattern of on-going flooding problems.

What has caused this situation? The problem likely begins with the shallow depth to groundwater present in Adams County. In much of the County, the depth to the water table is only 20 feet or less. There is limited storage capacity to hold excess water while it drains through the system. Above average precipitation in recent years has saturated the soil, and subsequent rainfall has nowhere left to go. The line graph of groundwater measurements from the nearest groundwater monitoring station in Waushara County reveal the trend in groundwater levels. The Town of Big Flats has been working with consultants to try and bring the Corps of Engineers to evaluate the situation.



Unfortunately, weather patterns have brought excessive amounts of water to Adams County and much of southwestern Wisconsin as marked by two major flooding events essentially back to back (2016 and 2018) significant enough to warrant federal disaster declaration.

Last Fall, August 27-28, 2018, storms brought major rainfall to the southern end of Adams County, which caused significant flooding that washed out roads and damaged structures. Road closures occurred in the towns of Quincy, Springville, Easton, and Dell Prairie. FEMA Public Assistance was granted for these municipalities and the County Highway Department for road, bridge and culvert damages.

FEMA did conduct damage assessments for Individual (private) Assistance, but it was not granted. FEMA needed at least 15-20 additional homes with major damage or destroyed to meet damage criteria/requirements. Homes that received flood damage were mainly on the south end of the County in the towns of Dell Prairie, Jackson, New Haven and Springville.

Prior to this, in the Fall of 2016 (Sept. 21 & 22) major rainfall/flooding occurred. FEMA conducted preliminary public assistance damage assessments in the towns of Adams, Dell Prairie, Easton, New Haven and Preston. Public Assistance was awarded for those communities and the County Highway Department. However, as with the 2018 event, there was not enough residential flooding to qualify for Individual Assistance.






Following these events since the Spring of 2019, the system appears to have reached capacity and the number of residents reporting flood damages has continued to climb with each additional rainfall. The Adams County Emergency Management and Health Departments have been continuously responding to and assisting local officials and residents with the on-going flooding issues. In September of 2019 County officials distributed bottled water to residents whose wells were covered in floodwaters and had test kits available to check wells for bacteria. Persistent, significant rainfall during the first week of October 2019 resulted in numerous roads flooded again and residents again experiencing water again in their basements, on their property, etc.

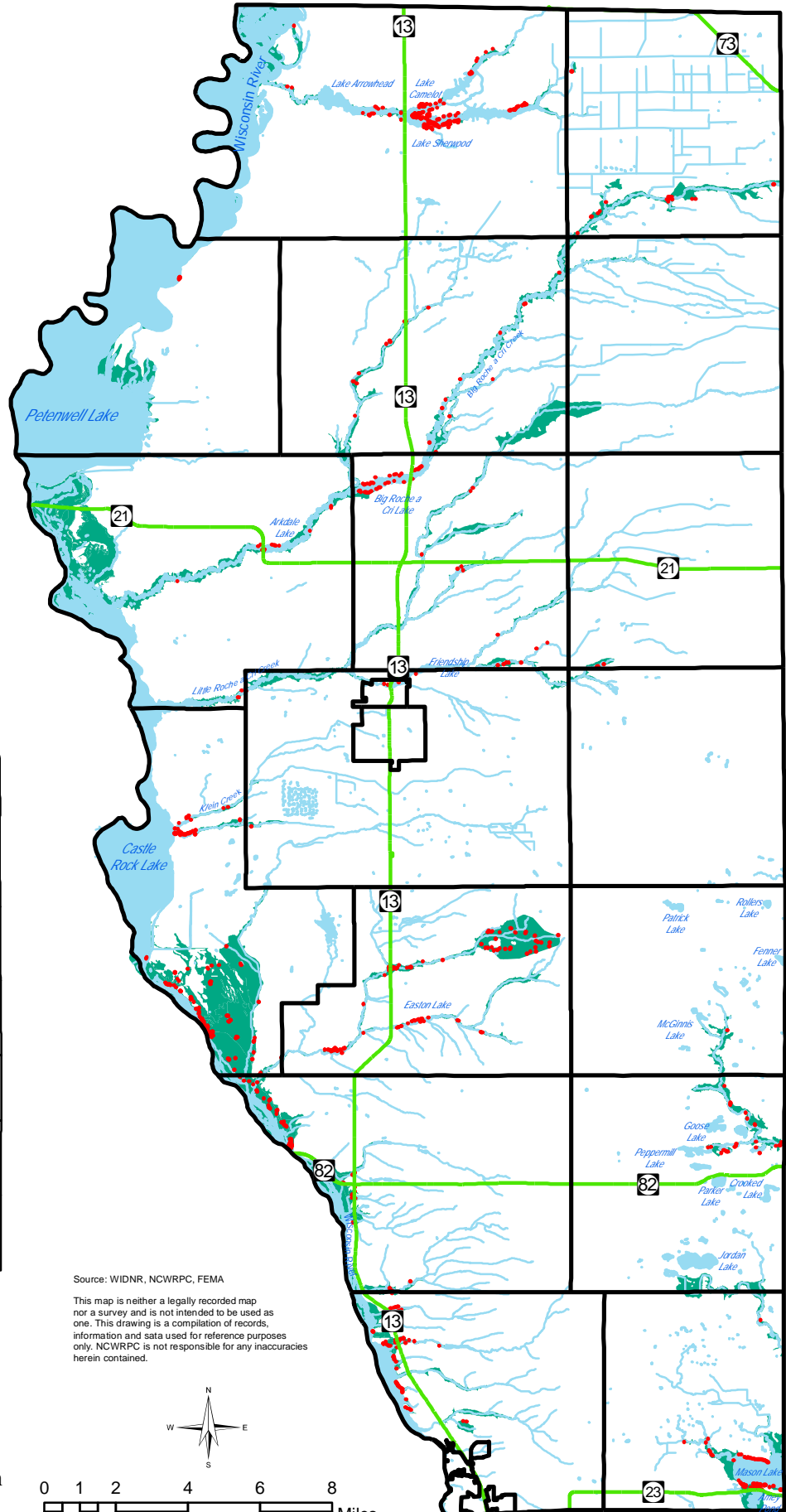
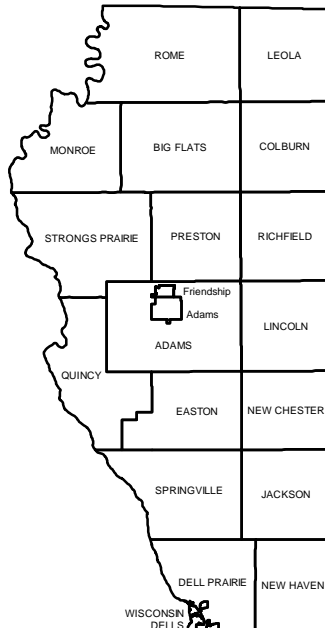
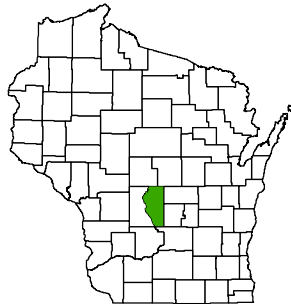


After the flooding in 2018, a Long Term Recovery Team program was launched in Juneau County, and their effort has extended to include Adams County as well. Community Development Block Grants (CDBG) and community based funding support a 3-year long effort to work with impacted residents to rebuild their lives and homes after the flood. In addition to contaminating drinking water in wells, flood waters present a host of clean-up problems including risk for tetanus or other infections, toxic chemical exposure and mold. Some residents were displaced from their homes for a month or longer with water to the first floor.

The spreading of misinformation is an ongoing problem for emergency management officials. Groundwater flooding is a more difficult concept to grasp than the more recognizable riverine flooding. With groundwater flooding, affected structures are often not in a FEMA identified flood hazard area (ie floodplain) and therefore not eligible for buyout or other flood relief programs. For more information and resources on groundwater flooding go to: <https://dnr.wi.gov/topic/WaterUse/gwLevels.html>.

Legend

-  Minor Civil Divisions
-  State Highways
-  Water
-  Structures in Floodplain
-  Floodplain



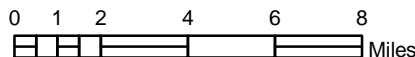
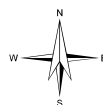
Source: WIDNR, NCWRPC, FEMA

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



Prepared By:
**North Central
Wisconsin Regional
Planning Commission**

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org

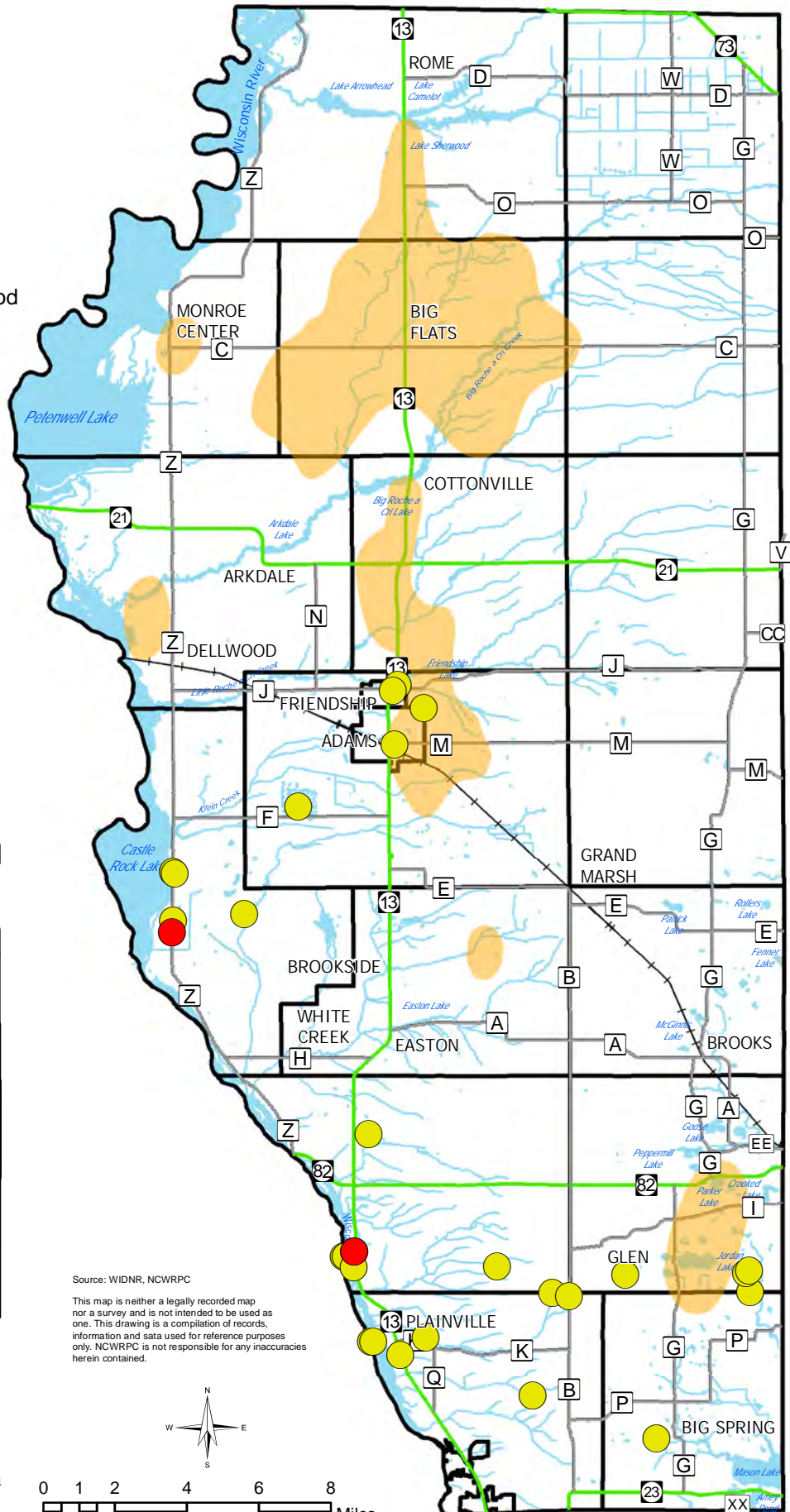
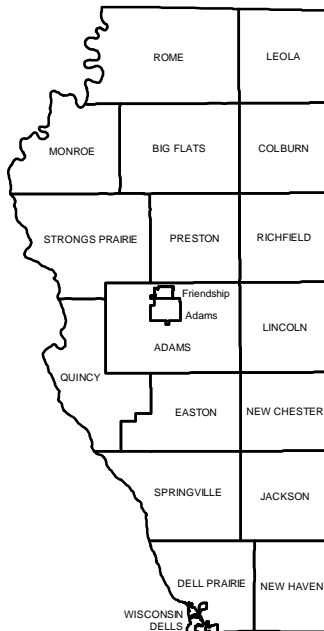


Legend

- Minor Civil Divisions
- State Highways
- County Highways
- Railroad
- Water
- Areas of on-going Flood Issues - Oct. 2019

Flood Damaged Structures - August 2018

- Commercial
- Residential



Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



Prepared By:
North Central
Wisconsin Regional
Planning Commission

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org

Future Probability and Potential Dollar Losses – Flood:

Based on the historic data presented here (frequency of past events), Adams County can expect a significant flood event about every 1.25 years on average. This equates to a probability of 0.8 or about an 80 percent chance in a given year.

Due to the significant number of dams and particularly large dams with high hazard ratings, dam failure is an important hazard event to plan for in Adams County. However, based on past experience, the actual probability of a major dam failure is very low. Considering the near failure of the Lake Camelot Dam in 2002 in conjunction with historic flood frequency data, probability of dam failure might be estimated at (less than) 0.05 or 5 percent chance in a given year, although this is not completely accurate, since failure of the dam was avoided by human intervention. The Easton Lake Dam and Kingsway Dam incidents in 2006 and 2007 may be an indicator that age and structural condition dams in the County may be pushing the probability of dam failure.

Historic data is again used to estimate potential future dollar losses due to flood. On average, Adams County might expect property and crop losses of \$118,000 on average, per flood occurrence based on the study period of 2009 to 2018. Over the next ten-year period, flood losses in Adams County could approach \$944,000. However, there is always the chance that a more significant flood will occur like 2018 or even 1993 with greater potential for damage.

HAZARD ANALYSIS: WILDFIRE**Background on Wildfire Hazard:**

A wildfire is any instance of uncontrolled, wild, or running fires occurring on forest, marsh, field, cutover, or other lands. Sometimes referred to as forest fires, wildfires can occur at any time the ground is not completely snow covered. The season length and peak months may vary appreciably from year to year. Land use, vegetation, amount of combustible materials present and weather conditions such as wind, low humidity and lack of precipitation are the chief factors for fire season length.

History of Wildfire in Adams County:

The Wisconsin DNR maintains a database of wildfire data. This data represents the most comprehensive source of information for analyzing fire trends in an area such as Adams County. However, the data is only current through 2014, so the 10-year span from 2005 through 2014 is used for analysis. Between 2005 and 2014, there was an average of 51 fires that have burned 418 acres, annually (excluding Cottonville). The typical fire in Adams County burns about 8.2 acres.

April is the leading month for fire in Adams with 29% of the total number of fires between 2005 and 2014. During this time frame, wildfires have occurred in each month of the year except February in Adams.

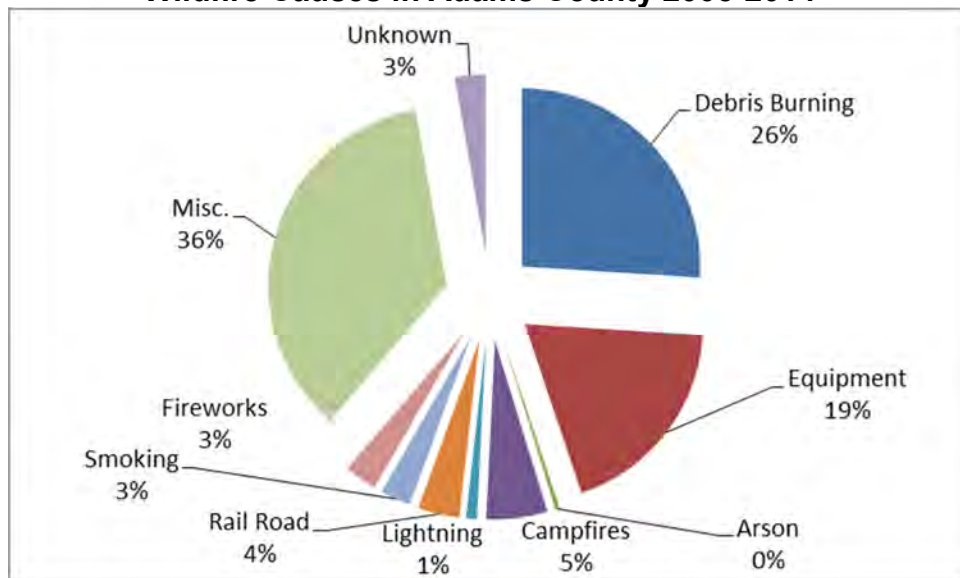
The Town of Rome experienced the most fires between 2005 and 2014 with 67, however, Easton would have led in total acres burned with 163, if not for the Cottonville fire. The data base attributes the entire fire to the town in which it starts, so Preston is "credited" with 3,400 acres for Cottonville. Besides the cities and village which have low wildfire occurrence (1 - 3), the Town of Colburn had the fewest fires with 7 over that period. Colburn also had the least area burned, with only 4.25 acres affected.



Cottonville Fire, 2005

The chart below breaks down the causes of wildfire within Adams County between 2005 and 2014 as classified by the WDNR. The principle cause of wildfire in Adams County and Wisconsin as a whole is debris burning which resulted in 131 or 26% of wildfires within the County. Equipment is the next leading category at 19% and includes vehicle, motor and other machinery related causes except railroad. Miscellaneous includes a variety of factors such as power lines, structure fires, and improper ash disposal. Arson resulted in less than 1% of wildfires. Lightning, the only natural cause of fire, was responsible for only 5 of the fires, just under 1%.

Wildfire Causes in Adams County 2005-2014



Source: WDNR

In 2005, Adams County experienced one of the largest wildfires in Wisconsin history. Known as the Cottonville Fire, the fire began on May 5 when debris burning in a fire pit got out of control. Approximately 3,410 acres were burned in the Towns of Big Flats, Colburn and Preston covering an area 1.5 miles wide and 7 miles long. Weather conditions were ideal for fire: warm and windy with very low humidity. Part of "sand country", Adams County's dominant vegetation is grass, pine and scrub oak, which are all known to burn quickly and intensely. Fire spread quickly to the tops of the pine trees.

Losses included 9 primary homes, 21 seasonal homes, and 60 outbuildings. Damage was sustained to 15 other homes. Evacuation of 200 residents was required. Firefighting efforts were massive with 5 aircraft (1 from Minnesota DNR), 200 WDNR personnel from across the state, 30 volunteer fire departments and law enforcement from State Patrol, Adams, LaCrosse and Vernon County Sheriffs and Onalaska Police. The fire took 11 hours to bring under control and several days for mop-up. The courts set restitution at over \$1.4 million indicating the level of damages.

According to the National Climatic Data Center's database, very dry conditions and strong winds across portions of central Wisconsin caused a controlled burn of grass clippings in a wooded area to quickly become out of control in Adams County on April 17, 2009. The wildfire burned approximately 106 acres and destroyed several vehicles, outbuildings, personal property, permanent and seasonal residences. One person was injured and damages were estimated at about \$500,000.

The NCDC also reported a wildfire, fanned by gusty winds, charred 158 acres of red pine in the Town of Rome during the early morning of April 13, 1998. The fire necessitated the evacuation of some nearby residences. Nobody was injured and no homes were lost, but there was an estimated property value loss of \$80,000.

Wild Fire Vulnerability Assessment:

Adams County has 253,962 acres of forestland, or 58 percent of the total land area, scattered throughout the County. The potential for property damage from fire increases each year as more recreational and retirement homes are developed on wooded land.

The trend toward introducing more human development into fire prone areas has brought about the term wildland urban interface or WUI. The WUI identifies areas where structures and human development meet or intermingle with undeveloped wildlands. It is within these areas where wildfire poses the greatest risk to human lives and property.

The WDNR has completed a statewide evaluation of fire risk, referred to as the CAR or Communities At Risk assessment. This assessment uses extensive

DNR geo-databases to analyze and map hazardous woodland fuel types and the degree of the intermixing of development with wildlands. The maps identify the level of risk for each community on a scale of very high, high, moderate, or low, and also have a community of concern designation. Virtually all of Adams County is rated very high or high except for Leola and Colburn, which are designated as communities of concern. See Map 11.

WDNR reports on the Cottonville Fire indicate that the loss of buildings was due, in part, to a lack of access (long, narrow driveways) and a lack of defensible space (free of fuels that can transmit fire to the structure and allow firefighters to safely operate).

Campgrounds are also a concern because of campfires. Adams County has seven campgrounds. Locations of the campgrounds are shown on Map 9.

Future Probability and Potential Dollar Losses – Wild Fire:

Wild fires are relatively common occurrences in Adams County. Over the 10 year period of analysis, there has been an average of 51 fires per year in the County. In other words, the probability is 1.0 or 100% chance of wildfire each year. However, these fires are typically contained rapidly and remain small, so that each has a minimal impact. The probability of a fire becoming more substantial, like Cottonville, might be estimated at (less than) 10% per year or 0.1.






Because of the relatively small impact of typical individual fires in the County, loss data is not tracked. This makes it difficult to develop an estimate of potential future dollar losses. However, with 51 fires per year, the County should expect some fires to "get out of hand" and likely approach or exceed the \$1.4 million in damages of the Cottonville Fire.

HAZARD ANALYSIS: DROUGHT / EXTREME HEAT**Background on Drought / Extreme Heat Hazard:**




A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat (temperatures which are 10 or more degrees above the normal high temperature for the period). There are basically two types of drought in Wisconsin: agricultural and hydrologic. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a dry period of sufficient length and intensity to affect lake and stream levels and the height of the groundwater table. These two types of drought may, but do not necessarily, occur at the same time.

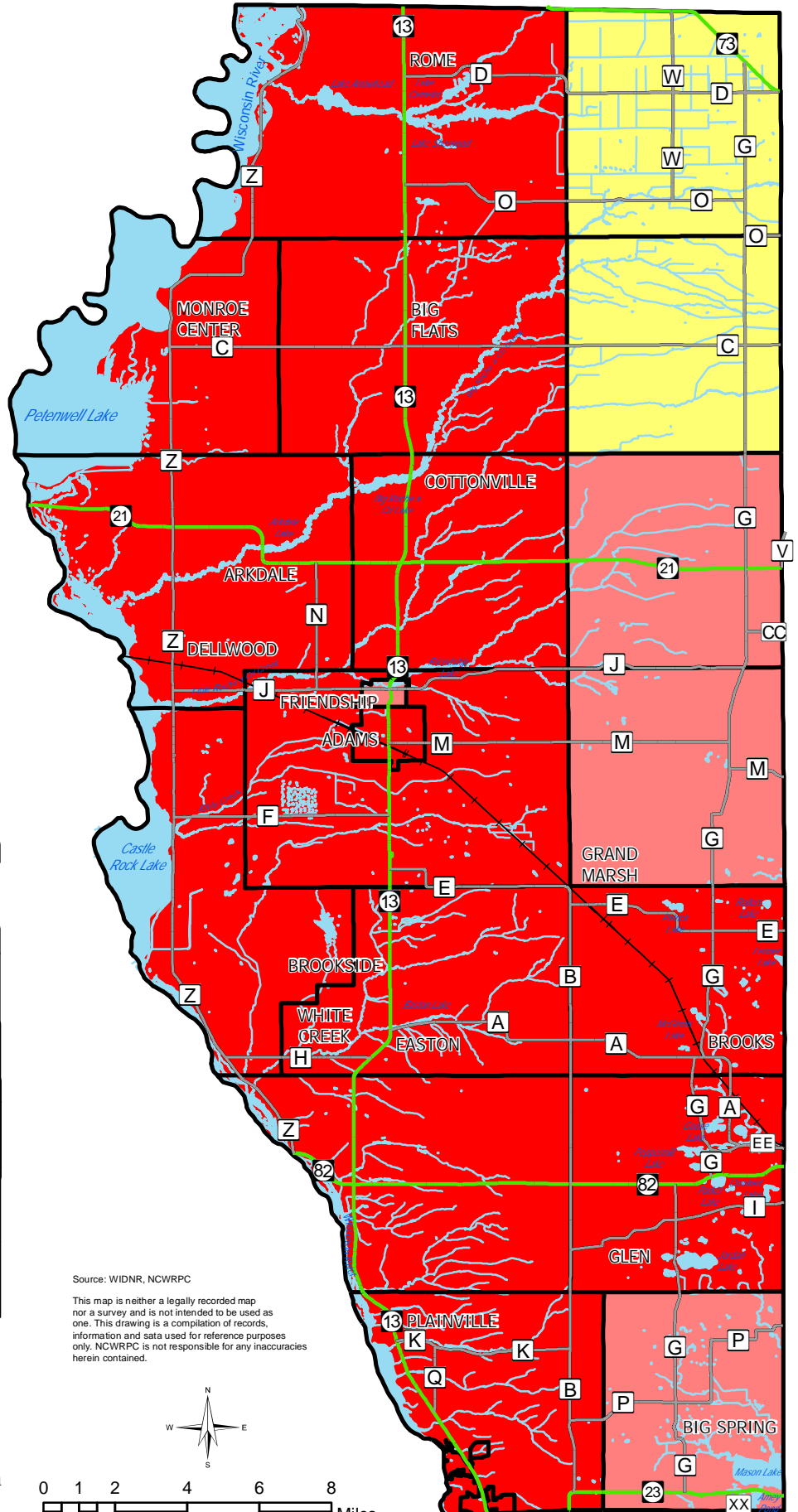
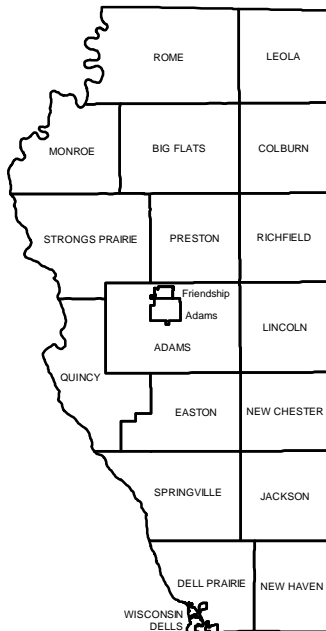
Droughts, both agricultural and hydrologic, are relatively common in the state. Small droughts of shortened duration have occurred at an interval of about every ten years since the 1930's.

Legend

-  Minor Civil Divisions
-  State Highways
-  County Highways
-  Railroad
-  Water

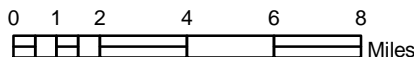
Wildfire Risk

-  Very High
-  High
-  Concern



Source: WIDNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



Prepared By:
North Central
Wisconsin Regional
Planning Commission

210 McClellan St., Suite 210, Wausau, WI 54403
715-849-5510 staff@ncwrpc.org - www.ncwrpc.org

Extended periods of warm, humid weather can create significant risks for people, particularly the elderly who may lack air conditioning or proper insulation or ventilation in their homes. Animals are also at risk during extended periods of heat and humidity. The National Weather Service issues a Heat Advisory when the Heat Index ranges from 105 to 114 degrees daytime and remains at or above 80 degrees at night, during a 24-hour period. The heat index combines the effects of heat and humidity to better reflect the risk of warm weather to people and animals. When heat and humidity combine to reduce the amount of evaporation of sweat from the body, outdoor activity becomes dangerous even for those in good shape. The index measures the apparent temperature in the shade. People exposed to the sun would experience an even higher apparent temperature. A heat index of 105 is considered dangerous and prolonged exposure can result in heat stroke, exhaustion and cramps. People should be reminded to use extreme caution when the heat index is between 95 and 105. A heat index of 95 occurs when the temperature is 90 degrees and the relative humidity is 50 percent.

History of Drought / Extreme Heat in Adams County:

NOAA reports indicate that much of Wisconsin including Adams County was under drought conditions between 2004 and 2013. At one point, the Governor had declared a state of emergency to get assistance to the state's agricultural sectors. The extended dry conditions posed serious challenges for farmers from drought stressed crops to issues providing feed for livestock.

Beginning in 2013, improved rainfall across the Midwest gradually relieved the drought in Wisconsin. Nationally, however, what is being tagged as the 2012-2015 North American Drought has affected over 80% of the U.S. as well as parts of Canada and Mexico, and drought continues to affect parts of the country. This drought is on track to exceed the 1988-89 drought, which also affected Wisconsin/Adams County, as the costliest natural disaster in U.S. history.

Adams County experienced the 1988-1989 drought with the rest of the Midwest. It was characterized not only by below level precipitation, but also persistent dry air and above normal temperatures. Stream flow measuring stations in the state indicated a recurrence interval of between 75 and 100 years. The drought occurred early in the growing season and resulted in a 30-60% crop loss, with agricultural losses set at \$1.3 billion for the state. No statistics were available for the amount of crops lost in Adams County, but 52 percent of the state's 81,000 farms were estimated to have losses of 50 percent or more, with 14 percent estimated having losses of 70 percent or more. Some rural wells went dry, and water conservation was instituted in the rural areas

The drought of 1976-1977 was most severe in a wide band stretching from north to south across the state. Stream flow measuring stations recorded recurrence intervals from 10 to 30 years. Agricultural losses during this drought were set at

\$624 million. Adams County was one of 64 counties that were declared federal drought areas and deemed eligible for assistance under the Disaster Relief Act.

According to the National Weather Service, Adams County has been affected by a number of heat waves over the years (16 since 1982 however no fatalities were documented). The warmest temperature (actual) on record in Adams County was 114 degrees F set on July 13, 1936.

The NOAA database has three recent listings for extreme heat events. The most recent was June 29-30, 2018 with two days of excessive heat across western Wisconsin. Heat indices topped out between 105 and 115 on both June 29th and 30th, although the high heat indices were more widespread on the 29th. Air temperatures in the upper 80s to middle 90s with dew points in the middle 70s combined to create the excessive heat. The highest calculated heat index in Adams County was 111 at the Mesonet station in Friendship.

Five people died from the effects of a long duration heatwave that gripped western Wisconsin from July 2nd through July 7th, 2012. The nearest fatality occurred in Juneau County. Numerous people were also treated for heat related illnesses. The highest apparent temperatures during the heatwave ranged from 100 to 110 each day. Other impacts from the heat included stimulating algae growth on area waterways which depleted oxygen levels leading to fish kills. Milk production was down during the heat as well, as cows started drinking more water and ate less feed leading to the drop. Campgrounds also reported a downturn in business as potential campers remained at home and numerous roads buckled and had to be repaired.

Other notable occurrences include 2011 and 2001. Warm and humid air invaded western Wisconsin on July 17, 2011 and remained in place for the next three days. Two people perished as a result of the excessive heat and at least eight other were treated for heat related illnesses (outside Adams). During this stretch, afternoon heat indices routinely topped out between 110 and 120. Little relief occurred at night, as overnight lows remained in the 70s. Most of the counties across western Wisconsin opened cooling centers. In 2001, the high temperature hit 90 degrees or higher for 9 consecutive days from July 31 to August 10. High humidity pushed the heat indices to 105-115. These dangerous levels lead to two deaths, although outside of Adams County.

Drought / Extreme Heat Vulnerability Assessment:

Droughts can have a dramatic effect on Adams County. The County has 118,737 acres of farmland or 27% of its land area dedicated to farming. With agriculture being a critical sector of the County's economy, droughts have disastrous effects. Even small droughts of limited duration can significantly reduce crop growth and yields, adversely affecting farm income. More substantial events can decimate croplands and result in total loss, hurting the local economy.

There are a number of high capacity wells in the County, mostly for crop irrigation. Irrigation can withdraw significant amounts of groundwater. The Central Wisconsin Groundwater Data Center reports that 95 percent of all groundwater withdrawal was used for irrigation in Adams County.

Irrigation can draw water that otherwise would naturally go to aquifers or surface waters. Drought can exacerbate the problem when high withdrawal rates versus little precipitation deplete waterbodies and aquifer supplies, therefore decreasing drinking water supplies, drying streams, and hindering aquatic and terrestrial wildlife. During severe droughts, some wells - mainly private wells - will go dry.

Another significant area of impact from drought includes the tourism sector of the economy. As lake levels go down, there is less tourism seen in the county. Recent drought conditions have left lake levels down and many boat launches cannot be used.

Droughts can trigger other natural and man-made hazards as well. They greatly increase the risk of forest fires and wildfires because of extreme dryness. In addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions.

The following is a list of things that may be adversely affected by a drought. Much of these community assets can be referenced in Part II.

- Infrastructure – municipal water supplies
- Surface water –groundwater reserves, recreation, and wildlife
- Forests
- Agricultural - crops, livestock

The areas most susceptible to drought conditions would be agricultural towns. Agricultural land is scattered throughout the County but largely the Towns of New Haven, Lincoln, New Chester, Jackson, Colburn, and Leola.

According to the Wisconsin Emergency Management, excessive heat has become the most deadly hazard in Wisconsin in recent times. Extreme heat can happen anywhere within Adams County affecting everyone, however the elderly and young are the ones with the highest risk of getting heat related injuries, which can lead to death. Ways to prevent injuries include wearing light-colored clothing, drinking plenty of water, slowing down, and not staying in the sun for too long.

Future Probability and Potential Dollar Losses – Drought/Extreme Heat:

Based on the historic data presented here (frequency of past events), Adams County can expect a drought every ten years on average, which is a probability of 0.10 or a 10 percent chance in a given year. Significant severe drought is somewhat less common, affecting Wisconsin once about every 15 years.

Drought is another hazard lacking good loss figures at the county level. However, a look at aggregate data for two major droughts can give some indication of potential impact. The two major droughts in Wisconsin resulted in losses of \$9.6 million (1976-77) to \$18 million (1987-88) per county on average.

Normally, central Wisconsin is known for its cold winters, however, extreme heat waves will affect Adams County in the future. Adams County can expect a heat wave once every 3.33 years or a 30 percent chance in a given year based on the historic data presented.

HAZARD ANALYSIS: SEVERE THUNDERSTORM/HIGH WIND/LIGHTNING/HAIL

Background on Severe Thunderstorm Hazard:

The National Weather Service definition of a severe thunderstorm is a thunderstorm event that produces any of the following: downbursts with winds of 58 miles per hour or greater (often with gusts of 74 miles per hour or greater), hail 1 inch (recently increased from $\frac{3}{4}$ inch) in diameter or greater or a tornado. Strong winds, hail, and lightning will be addressed in this section, however tornados will be referenced as a separate hazard.

Lightning results from discharge of energy between positive and negative areas separated by rising and falling air within a thunderstorm. This discharge heats the surrounding air to 50,000 degrees. Hail results as the warm rising air cools, forming ice crystals which are held by the updrafts until accumulating enough weight to fall. The hail size depends on strength of the updrafts keeping it up.

Thunderstorms frequency is measured in terms of incidence of thunderstorm days or days on which thunderstorms are observed. Wisconsin averages between 30 and 50 thunderstorm days per year depending on location. A given county may experience ten or more thunderstorm days per year. The southwestern area of the state normally has more thunderstorms than the rest of the state.

History of Severe Thunderstorms in Adams County:

The NCDC has reported 32 severe storm events for Adams County between 2009 and 2018. These storms typically contain some form of heavy rain, strong winds, and lightning. About 19 significant hail events, typically related to a severe thunderstorm, were listed during this time period. There were also two notable lightning incidents identified.

Severe storms moved across western Wisconsin on August 28, 2018. These storms produced damaging winds, large hail and heavy rain. This rainfall aggravated ongoing flooding and caused some new flooding to occur. Thousands of trees were blown down or snapped across southern Adams

County in a 3 to 4 mile wide area that started just south of the State Highways 13 and 82 intersection and continued east across Springville and Jackson to the Marquette County line east of Jordan Lake. Houses were damaged by trees that landed on them and boats were dislodged from docks and floated out into Jordan Lake. In Adams County, the only hail reported was quarter sized south of Brooks. Because of the flooding, the Governor declared a state of emergency for the entire state. A federal disaster declaration was also made for Adams, Crawford, Juneau, La Crosse, Monroe, Richland and Vernon counties. Damage estimates exceeded \$6 million.

On July 6, 2017, severe thunderstorms with very large hail moved across portions of western Wisconsin during the late afternoon and evening. Hail ranged in size up to 3.5 inches in diameter for the event. Quarter sized hail generally fell across Adams County, however, hail reached half-dollar size in the Big Flats area and caused around \$1.5 million in crop damages. Power poles and trees were blown down near Brooks.

Thunderstorms developed during the afternoon of June 15th, 2016 ahead of a cold front. As these storms moved across central Wisconsin, they dropped large hail and produced some damaging winds. The largest hail size reported was egg sized south of Big Flats. An estimated 70 mph wind gust was reported near Monroe Center which blew down several trees and damaged homes. Several trees were blown down near Petenwell Lake. Power lines were also taken down by the storm. NCDC damage estimate was \$25,000.



Wind Damage - Corn. Tower

On September 2, 2011, severe thunderstorms produced damaging winds during the morning hours across portions of southwest and central Wisconsin. Numerous trees and power lines were down from La Crosse eastward to Adams County. Over 10,000 residents lost power and schools were either delayed or closed in these areas. Trees and power lines were blown down across portions of Adams County blocking roadways and falling on top of homes and cars. Several six inch diameter trees were blown down near Castle Rock Park. Four miles north of Friendship, a tree fell on a vehicle on State Highway 21 at the entrance of Roche-A-Cri State Park. The Town of Preston was hit the hardest. NCDC damage estimate was \$42,000.

On October 26, 2010, a low pressure system deepened over northern Minnesota and set the Wisconsin state record for the lowest recorded barometric pressure. This system was responsible for high winds across portions of southwest and central Wisconsin in the morning hours of October 26th and the daytime hours of the 27th. Several trees were blown down across the county, including the areas around Dellwood, County Highway Z, and Arkdale. Some sporadic fires were started from trees falling onto power lines causing power outages. Sporadic

damage to roofs and buildings also occurred. A few vehicle collisions also occurred with downed trees. Two pine trees, nearly seventy feet tall, blew down in Friendship. One of the pine trees landed on a parked pick-up truck partially crushing the cab.

The most recent hail incident occurred on August 28, 2018, as noted above. This was preceded by events on September 20, 2017 and July 6, 2017 (see above for July 6). On September 20, 2017 a line of thunderstorms developed across portions of western and central Wisconsin. Some of these storms produced hail up to golf ball sized near the south end of Lake Petenwell in Adams County. In June of 2016, egg-sized hail fell in Big Flats.

Thunderstorms that developed over South Dakota during the early morning hours of May 26, 2012 held together and intensified through southeast Minnesota to produce large hail and locally heavy rain over portions of western and central Wisconsin during the late afternoon and evening. The hail ranged in size from one inch up to golf ball in Big Flats. NCDL damage estimate was \$6,000.

A complex of thunderstorms developed during the evening hours of July 12, 2015 over Minnesota. As these storms move southeast during the early morning hours of the 13th, they strengthened over central Wisconsin and started producing damaging winds up to 62 mph which blew down trees in Arkdale and Petenwell County Park. A house located near Lake Camelot sustained significant fire and water damage from a fire started by a lightning strike. The lightning strike also damaged the phone lines of a neighboring house. NCDL damage estimate was \$20,000.

On May 4, 2010, a lightning strike started a garage fire. Local fire officials indicated the garage was a complete loss, but there were no injuries as a result of the fire. The start time of the fire was corroborated with radar data, as well as with the detection of a cloud to ground lightning strike in the exact location of the fire at that time. NCDL damage estimate was \$8,000.

Severe Thunderstorm Vulnerability Assessment:

The National Weather Service can forecast and track a line of thunderstorms that may be likely to produce severe high winds, hail, and lightning but where these related hazards form or touch down and how powerful they might be, remains unpredictable. The distribution of thunderstorms and related hazard events have been widely scattered throughout the county.

Many thunderstorm events (without tornados) have caused substantial property and infrastructure damage, and have the potential to cause future damage. In order to assess the vulnerability of the Adams County area to thunderstorms and related storm hazards, a review of the past events indicate significant impacts to:

- Infrastructure – hospitals, schools, street signs, police and fire departments
- Utilities - electric lines/poles/transformers, telephone lines, radio communication
- Transportation – debris clean-up
- Residential - mobile homes, garages, trees and limbs, siding, windows
- Businesses – signs, windows, siding, billboards
- Agricultural - buildings, crops, livestock
- Vehicles – campers, boats, windshields, body, paint

Based on review of the historic patterns of thunderstorms associated with high wind, hail, or lightening, there are no specific municipalities that have unusual risks. The events are relatively uniform and a countywide concern. However, during the City/Village Planning Meeting for this Plan Update, both the City of Adams and the Village of Friendship identified severe thunderstorm winds (high straight line winds) as a major vulnerability concern due to the potential for power outage and resulting impact on municipal services and the population itself (heating/cooling, food & water safety).

Future Probability and Potential Dollar Losses - Severe Thunderstorms:

Based on historical frequency, Adams County can expect 3.2 thunderstorm events per year on average. In other words, the probability is 1.0 or a 100% chance of multiple storms in a given year. The probability of a thunderstorm with damaging hail in Adams County is also at 1.0 or 100% chance with about 1.9 incidents in a given year. For notable lightning events there is about a 20% chance in a year.

According to the NCDC, historic thunderstorm events with associated high wind and reported damages averaged \$239,385 in property damage per incident and \$10,000 in reported crop damage. Historic thunderstorm events with associated hail that reported property damage averaged \$33,333 and \$1.43 million in reported crop damage. Historic thunderstorm events with associated lightening that reported property damage averaged \$14,000. Losses in Adams County associated with severe thunderstorms could approach \$35,868,647 over the next ten-year period.

HAZARD ANALYSIS: HAZARDOUS MATERIALS INCIDENTS**Background on Hazardous Materials Incidents Hazard:**

This type of hazard occurs with the uncontrolled release or threatened release of hazardous materials from a fixed site or during transport that may impact public health and safety and/or the environment.

Under the Emergency Planning and Community Right to Know Act (EPCRA), a hazardous material is defined as any chemical that is a physical hazard or health hazard [defined at 29 CFR 1910.1200(c)] for which the Occupational Health and

Safety Administration (OSHA) requires a facility to maintain a Material Safety Data Sheet (MSDS). Under EPCRA there is no specific list of hazardous materials. An extremely hazardous substance (EHS) is defined as one of 356 substances on the United States Environmental Protection Agency list of extremely hazardous substances, identified at 40 CFR Part 355.

EPCRA of 1986 also known as SARA Title III, brings industry, government and the general public together to address emergency planning for accidental chemical releases. The emergency planning aspect requires communities to prepare for hazardous chemical releases through emergency planning. This provides essential information for emergency responders. The community right-to-know aspect increases public awareness of chemical hazards in their community and allows the public and local governments to obtain information about these chemical hazards.

Counties in Wisconsin, including Adams County have a Local Emergency Planning Committee (LEPC) that is set up in accordance with the federal legislation and is responsible for implementation of EPCRA at the county level. The County Emergency Management Director is a member of the LEPC to ensure continuity and coordination of emergency response planning.

To meet the requirements of Title III of EPCRA, the LEPC developed the County Hazardous Materials Response Plan. This plan establishes policies and procedures for responding to hazardous material incidents. The LEPC is required to review, test, and update the Plan every two years. Methods for notification and reporting an incident are outlined in the plan. This plan also works in conjunction of the County Emergency Operations Plan (EOP) where alert to the public, communications, and response procedures are outlined. The plan is tested through tabletop, functional and full-scale exercises and actual response situations.

To provide a high level of hazardous materials response capabilities to local communities, Wisconsin Emergency Management contracts with 21 Regional Hazardous Materials Response Teams. The teams are divided into Task Forces: Northeast Task Force, Northwest Task Force, Southeast Task Force, and the Southwest Task Force. These Task Forces are then divided into Type I, Type II, and Type III teams, all with complimentary capabilities and training requirements.

Adams County is located in the Southwest Taskforce area with Type II teams out of the LaCrosse and Madison Fire Departments. The nearest Type III team is at the Portage Fire Department with other Type III's at Vernon, Grant and Rock counties. The Regional Response Team may be activated for an incident involving a hazardous materials spill, leak, explosion, injury or the potential of immediate threat to life, the environment, or property. The Regional Teams respond to the most serious of spills and releases requiring the highest level of

skin and respiratory protective gear. This includes all chemical, biological, or radiological emergencies.

Several counties have Type IV Hazardous Materials Response Teams. These county teams respond to chemical incidents which exceed the capabilities of local fire departments but do not require the specialized training or equipment of the Regional teams. County teams may also provide assistance to surrounding counties. Adams County does not have its own team but contracts with the Juneau County Team for this coverage.



HazMat Team Training

History of Hazardous Materials Incidents in Adams County:

There have not been any major reported hazardous material problems involving fixed facilities, roadways, railways, or pipelines. Hazardous materials incidents have occurred but on a relatively small scale. They still, however, can cause considerable property damage and can have a high risk in terms of loss of human life or injury. The WDNR Bureau for Remediation and Redevelopment Tracking System or BRRTS maintains a listing of contaminated properties on-line. The BRRTS database identifies 58 environmental spills in Adams County between 2009 and 2018. All of these spill sites have been cleaned and closed at this time.

Vulnerability Assessment:

In 2013, the Adams County LEPC sponsored a detailed Hazardous Materials Commodity Flow Study. This Study inventoried the risk factors that make hazardous materials incidents a keen concern in Adams County, which are reviewed below:

Fixed Facilities

The Commodity Flow Study identified 21 facilities within the County meeting reporting the requirements for one or more hazardous chemicals. These are sites that have hazardous substances present at any one time in amount equal to or exceeding the chemical-specific threshold planning quantity (TPQ).

Highway

Trucks carry the bulk of hazardous materials to and through the County. Regular shipments of gasoline, propane, acid and other substances are delivered across Wisconsin. Every roadway in the County is a potential route for hazardous material transport, but major transportation routes are State Highways 13, 21, and 82 (see Map 5).

Table 19 – Number of Trucks Carrying Hazardous Materials at Intersections in County

Intersection	# of Trucks
State Hwys. 13 & 21	34
State Hwy. 13 & UP RR Intersection	7
State Hwys. 13 & 82	27

Source: Richland & Adams Co. LEPCs, 2013.

The Commodity Flow Study monitored traffic at key locations and counted trucks with Hazardous Warning Placards. The locations of the intersections and the total number of trucks with hazardous materials are seen in Table 19.

Railroad

The Union Pacific Railroad – another mode for the transportation of hazardous material, provides 24 miles of track to Adams County (see Map 5) with a rail yard located on the south side of the City. Although trucks transport most of the hazardous materials in the state and the U.S., rail can carry significantly larger loads of hazardous materials. The Commodity Flow Study identified the hazardous materials being transported by rail through Adams County. Table 20 lists the top five with percent of total.

Table 20 – Top Hazardous Commodities Carried on Rail in Adams County by %

Material	% of total
Molten Sulfur	33.41
Elevated Temp. Liquid NOS	19.40
Sulfuric Acid	13.66
Hydrochloric Acid	12.55
Ferric Chloride Solution	3.48

Source: Richland & Adams Co. LEPCs, 2013.

The study cited 4,100 rail car loads of hazardous materials moved through the County in 2012 with the average number of hazardous cars at about 11 per day.

Pipeline

Enbridge Pipeline Company provides pipeline to move petroleum through the County (see Map 6). It runs 31 miles from the northern part of the county to the eastern part. Approximately 1.5 million barrels per day move through this pipeline. There had not been a major incident with the pipeline within Adams County, but the DNR database shows some significant spills such as in July 2012 when a crack in the pipeline allowed about 1,700 barrels of crude oil to spill in the town of Lincoln. Total property damage was listed at \$10.5 million. An example of a major incident is the leak of 176,000 gallons of crude oil in Rusk County in 2007. Groundwater contamination was the primary consequence of that spill.

There are also natural gas sub-transmission lines entering the County from the east. According to the Commodities Flow Study, natural gas pipelines while not common are not rare either and can be very dangerous. Large amounts of explosive gas can escape quickly from a breach.

A hazardous materials incident can have far reaching impacts, however, those communities which are traversed by major highways, rail or pipeline are susceptible to a higher risk, refer to Maps 5 and 6. During the City/Village Planning Meeting for this Plan Update, both the City of Adams and the Village of Friendship identified hazardous materials incidents as a major vulnerability concern due to being hubs for facilities and transport of these materials within the County.

Future Probability & Potential Dollar Loss – Hazardous Materials Incidents:

Based on the historic data presented here (frequency of past events), Adams County can expect about 5.8 minor hazardous material releases each year on average, which is a probability of 1.0 or a 100 percent chance in a given year.

There is insufficient data to determine the probability of a major incident. However, with the number of verified trucks carrying hazardous materials, a major industrial railway and a petroleum pipeline moving through the County, the chances appear to be significant for a catastrophic hazardous materials incident occurring at some point in Adams County.

As with the probability, there is limited historic data to base an estimate of potential dollar losses from HazMat incidents. However, based on occurrences statewide, damages range from \$100 to \$10.5 million per incident. The higher end of the range is not impossible in Adams County.

INTRODUCTION

Hazard mitigation is any action taken to reduce or eliminate the long-term risk to human life and property damage from natural hazards. This chapter describes the mitigation goals and actions to be taken by Adams County and the local units of government within the county for each of the hazards identified in Part III – Risk Assessment. The intention is to reduce or avoid long-term vulnerability to the identified hazards.

Part IV of the Adams County All Hazards Mitigation Plan Update will discuss the following factors in establishing the multi-jurisdictional mitigation strategies:

- Benchmark Progress of Previous Plan 2015-2019
- Review of Mitigation Goals
- Prioritize Identified Mitigation Strategies
- Establish Mitigation Action Plan

PROGRESS REPORT 2015 - 2019

Table 21 identifies the completed, deleted or deferred mitigation actions from the previous update in 2015. For each action recommendation, a brief status report is provided which describes the progress made on that measure. If an item remains unchanged, a description is provided as to why no action has been taken and whether that item is deferred to the new plan.

The table also provides the new status of each recommendation with regard to the updated plan alongside the previous timeframe target for comparison. Many of the recommendations are on-going efforts and are carried over as such in the updated action plan. Some have had significant progress or have been deferred, but are recommended for further action with new target date or on-going status. If the recommendation has been completed with no further specific action anticipated within the next five year planning period, it is shown as "deleted" and will not appear in the updated action plan. In some cases, an incomplete action is not selected for various reasons (noted) and is shown as deleted. In a few cases, related recommendations are combined as indicated.

This progress report serves as a benchmark for progress in achieving the multi-jurisdictional mitigation goals of Adams County and the local jurisdictions that participated in the Plan Update.

TABLE 21 BENCHMARK FOR PROGRESS 2015 - 2019 PLAN			
2015-2019 Plan Measure	Progress Report	Original Status	New Status
Continue to promote the increased use of National Oceanic and Atmospheric Administration (NOAA) weather radios.	Regularly promotes NOAA alert radios including special events. Supports Storm Spotter training.	On-going (1)	On-going (1)
Continue to update/add Emergency Management Department link off existing County web site.	Website regularly maintained with hazard information.	On-going (2)	On-going (2)
Maintain Co. Emergency Response Zone Atlas - update, reprint and distribute.	Atlas was last updated in 2018. Recommended update cycle is 5 years, but Funding always an issue.	2017 (3)	2024 (3)
Develop county-wide evac & sheltering plans...	Manning and liability limitations. Red Cross has updated their list.	2019 (4)	2021 (4)
Work toward development of county-wide early warning systems...	Some progress - County using Nixle system.	On-going (5)	On-going (5)
Develop action plans and training for areawide cooperation and coordination during major incidents...	Some progress - but more remains to be done. Has become more of an on-going effort.	2018 (6)	On-going (6)
Review Chula Vista emergency response plan and work with company representatives to develop cooperation & coordination.	County EM has reviewed and provided feedback on resort's EAP. Resort personnel participating in training and exercises inc.: active shooter tabletop on 08-30-19.	2015 (7)	Completed
Assist municipalities with review and update of local emergency response plans.	County EM assists 2-3 municipalities with their plans each year as needed.	On-going (8)	On-going (8)
The Town of Dell Prairie should install emergency backup generator at Town Hall.	Town has installed back-up generator and tests it periodically.	2016 (9)	Completed
The City of Adams and Village of Friendship should establish drill/exercise programs to help evaluate if they are prepared for any given hazard, including public awareness.	The City and Village regularly participate in training and exercises with the County and a variety of responding agencies.	On-going (10)	Completed
Identify buildings that will provide protection to the public in the event of a tornado warning	Still identified as a need, but not yet completed as County & municipalities focused on other activities. Expand scope to include other / all hazards.	2018 (11)	2020 (12)
Identify and construct tornado shelters in areas where deficient, campgrounds and areas where housing lacks basements, etc.	County has applied for funds previously for this recommendation and been denied.	On-going (12)	On-going (13)
Require and promote construction standards and techniques (tornado/wind).	Ongoing enforcement of standards. Now "hurricane" clip requirements for new construction.	On-going (13)	On-going (14)

TABLE 21 Continued			
2015 - 2019 Plan Measure	Progress Report	Original Status	New Status
Establish shelters in the Towns of Leola, Monroe, New Haven and Rome.	No progress to date.	2019 (14)	2024 (15)
Encourage the development of snow fences.	A number have been installed around the County but more are needed.	On-going (15)	On-going (16)
Promote winter hazards awareness, including home and travel safety measures.	County does annual winter awareness "PR" campaign.	On-going (16)	On-going (17)
Continue to provide outreach efforts to homeowners on protecting homes and structures from wildfires.	A number of towns have done wildfire protection planning and are working with WisDNR on Firewise programs.	On-going (17)	On-going (18)
Provide ample training for volunteer fire fighters for larger fires.	Regular training and exercises being conducted cooperatively by the DNR, Adams County & local municipal FDs.	On-going (18)	On-going (19)
Support establishment of Firewise Communities across the County.	So far, Firewise programs have been implemented in Snug Harbor (Quincy), Crystal Brook Woods (Strongs Prairie), Lake Camelot, Lake Sherwood, Lake Arrowhead, West Windshore (Rome).	On-going (19)	On-going (20)
Develop Wildfire Protection Plans in high risk Towns.	Wildfire Protection Plans have been done in Rome, Big Flats and Monroe. But most of county is high risk so more are needed.	2019 (20)	2023 (21)
Promote heat hazard awareness...	County does heat awareness "PR" campaign as needed.	On-going (21)	On-going (22)
Encourage farmers that irrigate to use irrigation scheduling programs and drop/misting systems.	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	On-going (22)	On-going (23)
County should be prepared on how to inform farmers during times of drought.	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	On-going (23)	On-going (24)
Inform farmers on purchasing crop insurance.	Ongoing efforts of the County UWEX Agricultural Agent and FSA Office.	On-going (24)	On-going (25)
Mitigate impacts of flooding through acquisition / demolition of homes in the floodplain/flood damaged...	No progress to date. Budget issues.	On-going (25)	As Needed (26)
Continue development of Emergency Action Plans (EAP) for all county owned dams.	EAPs have been updated for a number of dams in the County.	On-going (26)	On-going (27)
Address Friendship Dam situation and develop emergency action plan.	Lake Association is working with an engineer, and EAP was completed in 2018.	TBD (27)	<i>Completed</i>
County/City/Village continued compliance in the NFIP.	On-going efforts of the County, City and Village.	On-going (28)	On-going (31)
Do public education and information regarding dam function and operations.	No progress to date.	On-going (29)	On-going (32)

TABLE 21 Continued			
2015 - 2019 Plan Measure	Progress Report	Original Status	New Status
Promote the planting of windbreaks to protect farmsteads, buildings & open fields from high winds.	A number of plantings have been installed around the County, but more is needed.	On-going (30)	On-going (33)
Enforce local building codes to improve structures' ability to withstand greater wind velocities.	Ongoing regulation of new buildings and renovations. Uniform Dwelling Code (UDC) has been updated.	On-going (31)	On-going (34)
Promote public awareness of proven lightning safety guidelines to reduce risk.	County EM has articles published in the local newspaper and posted information on the County website.	On-going (32)	On-going (35)
Implement recommendations within Hazardous Materials Commodity Flow Study...	Limited progress to date. Budget issues. LEPC continues to work on these items	2017 (33)	On-going (36)
Do preplanning and training exercise for local fire depts to deal w/ special situations: hospital O2 tanks, COOP anhydrous ammonia, etc.	LEPC and County EM has organized training and exercises. Continuous or recurring effort is needed to keep up with changing technology and personnel.	2016 (34)	2023 (37)

LOCAL HAZARD MITIGATION GOALS

The mitigation strategy is based on a set of goals to reduce or avoid long-term vulnerabilities to the hazards identified in the Risk Assessment. The goals were established by the previous Plan Taskforce during the development of the last update. The Update Plan Taskforce reviewed the goals and concurred that these goals continue to represent the desired conditions to strive for through the mitigation efforts of the County and municipalities.

The mitigation goals for reducing or avoiding the long-term vulnerability of Adams County are as follows:

- Prepare and protect residents and visitors from all hazards.
- Lessen the impact floods have on people, property, and the environment.
- Eliminate the loss of life and reduce the risk of property damage in downstream areas that result from a dam failure.
- Reduce long-term vulnerabilities from high hazard dams that pose a significant risk to the public.
- Minimize the threat to human life and property damage caused by associated high wind and lightning.
- Protect the health, safety, and welfare of county residents and visitors, along with mitigating future loss of property from tornados.
- Create safety awareness to citizens and travelers of Adams County to protect them during and after winter storm events or periods of extreme cold.
- Minimize crop loss while maintaining water supplies during times of drought.
- Protect the safety and property of residents from forest and wildfires.
- Protect people and natural resources from adverse effects of hazardous material incidents.

PRIORITIZATION OF STRATEGIES

The Update Plan Taskforce considered a number of factors in identifying and ranking proposed mitigation strategies. The matrix, below, describes the factors incorporated into the prioritization process. The resulting priority of each strategy is shown in the strategy Table 22.

Prioritization Factors for Adams County Mitigation Strategies

<i>Strategy Prioritization Factor</i>	<i>Description of Factor Considerations</i>
Priority of Hazard Type	The ranking of hazard types, tornado, flooding, etc., accounts for threat to human safety and possible property damage and was carried over to groups of strategies by hazard type. Strategies believed to benefit multiple hazards (listed under "All Hazards") were valued higher.
Ease of Implementation	Strategies where existing staff and resources are adequate were valued higher than those where additional resources are necessary. Consideration was also given to strategies that meet other countywide goals or incorporated as part of another county project. Project timing was also a consideration as to when funding such as grant applications might be available and when various activities could be scheduled.
Perceived Cost versus Potential Benefit	Although a detailed cost-benefit analysis was deemed beyond the scope of this study, the Committee weighed the perceived costs of each strategy against the potential benefit anticipated. Proposals that seemed economically unfeasible were rejected.
Multi-jurisdictional Application	Strategies benefiting multiple jurisdictions were valued more than those pertaining to fewer jurisdictions.

For the previous Plan, each strategy was scored by the Taskforce based on these prioritization factors and assigned a high, medium or low rating to reflect their relative level of priority for that strategy. A 3-point weighted scale was used to average the scores into the overall high, medium or low priority for the County or local units as shown in Table 22.

Using the prioritization factors as a guide, the Plan Update Taskforce took the original ranking, making minor adjustments to reflect current conditions.

MITIGATION ACTION PLAN

The recommended mitigation strategies are organized by hazard beginning with some overall strategies that apply to a number of different hazards and are listed under the category, "all hazards". Each strategy is intended to help achieve one or more of the Local Hazard Mitigation Goals outlined earlier in this chapter.

The mitigation strategies are outlined in Table 22, below. Each strategy is broken down as follows:

- ***Mitigation Measure:***

Describes the proposed mitigation strategy to be implemented.

- ***Responsible Units:***

The proposed lead agencies or jurisdictions are identified along with other agencies or jurisdictions that the recommended action applies to. This does not preclude other agencies or jurisdictions from participating in the action.

- ***Cost Estimate:***

Cost estimates included where known. Other strategies are implemented primarily through day-to-day staff efforts under their departmental budgets.

- ***Existing and Potential Resources to Implement:***

Identifies resources currently in use or that may be leveraged to complete projects either through the budgeting process or submission of grant applications to relevant funding programs.

- ***Project Timeframe:***

Recommended or anticipated completion target for the strategy. Some projects are on-going due to their inherent nature, such as the need to continually inform or educate the public on a recurring hazard issue or to keep a program going such as technology based early warning systems. Actual project implementation may depend on availability of adequate funding and/or staff time to carry out actions to implement.

- ***Priority Level:***

The relative priority level of the recommended strategies in relationship to one-another, see previous section on Prioritization of Strategies for details on the ranking criterion and process. Useful in decision making on the allocation of limited financial and human resources.

Table 22 - Mitigation Action Plan					
Mitigation Measures	Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project** Timeframe	Priority Level
ALL HAZARDS					
1 Continue to promote the increased use of National Oceanic and Atmospheric Administration (NOAA) weather radios.	Staff Time	Dept Budget / Mitigation Grant	County EM Dept	On-going	High
2 Continue to maintain Emergency Management Department Page - linked from County web site.	Staff Time	Dept Budget	County EM Dept	On-going	High
3 Maintain County Emergency Response Zone Atlas - Was identified as an important for managing emergency situations at agency meeting. EM should work with DNR to update, reprint and distribute.	\$20,000	WisDNR / WEM Funding	County EM Dept / WisDNR	2024	High
4 Develop County-wide evacuation and shelter plans including public education component, needs of special populations and facilities such as campgrounds, elderly housing, etc.	\$30,000	General Funds Dept Budgets	County / City / Village / All Towns	2021	Medium
5 Continue development of county-wide early warning systems including utilization of current & emerging technologies such as EAS and IPAWS. Coordinate siren testing. Expand utilization of the Nixle System. Include public education element.	Cost to be determined	General Funds Dept Budgets	County / City / Village / All Towns	On-going	High
6 Develop action plans and training for areawide cooperation and coordination during major incidents. Issues include: energy companies, health concerns, vulnerable populations, fuel supplies, equipment and manpower, public awareness, etc.	Costs to be determined	Dept Budgets	County / City / Village / All Towns	On-going	High
7 Warning Sirens - Both the village and city should look to replace their aging warning sirens. Village siren recently needed costly repairs.	\$25,000 ea.	General Funds	City / Village	2024	Medium
8 Assist municipalities with review and update of local emergency response plans.	Staff Time	Dept Budget	County EM Dept	On-going	High
9 Backup Power - The City of Adams should install emergency back-up generator at the fire station to maintain operations.	\$25,000	General Fund / Assistance to Firefighters Grant	City of Adams	2021	High
10 Backup Power: Limited generator capacity in the County. Many critical facilities do not have back-up power. - The City of Adams should install emergency back-up generator at its public works facility to maintain operation of bay doors, radios/repeater, etc. Currently, the WWTP, 1 well and the lift station (portable) have generators. The Village of Friendship should install generator (portable?) at lift station to prevent sewer back-ups.	\$25,000 ea.	General Funds	City of Adams / Village of Friendship	2022	High
11 Improve county-wide emergency communications - add new encrypted channel to back-up primary emergency communication frequencies in the County.	Costs to be determined	General Fund / CIP	County Sheriff's Office	2023	High

Mitigation Measures	Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project Timeframe	Priority Level
TORNADO					
12 Identify buildings that will provide protection to the public in the event of a tornado warning	Staff Time	Dept. Budget	County / City / Village / All Towns	2020	Medium
13 Identify and construct tornado shelters in areas where deficient: campgrounds, areas where homes lack basements, etc.	Cost to be determined	Mitigation Grants CDBG Program	County / City / Village / All Towns	On-going	Medium
14 Require and promote construction standards and techniques	Staff Time	Dept. Budget	County P&Z Dept	On-going	Medium
15 Shelter: Establish emergency shelter in the Town of Quincy in the Dellwood Subdivision Area. The City of Adams should remodel City Hall so that parts could be used for emergency shelter purposes. The Village of Friendship should consider upgrades to allow Village Hall to serve as a shelter. All shelters should include back-up power to maintain cooling/warming is a power outage.					
	\$100,000 ea.	CDBG Program / Mitigation Grants / Local budgets	Town of Quincy / City / Village	2024	Medium
WINTER STORMS / EXTREME COLD					
16 Encourage the development of snow fences.	Costs vary	NRCS funding programs	Hwy Dept / LWCD	On-going	Medium
17 Promote winter hazards awareness, including home and travel safety measures.	Staff Time	Dept. Budget	County EM Dept	On-going	Medium
FOREST FIRE					
18 Continue to provide outreach efforts to home owners on protecting homes and structures from wildfires.	Staff Time	Dept. Budget	Co. EM Dept / WDNR	On-going	Medium
19 Provide ample training for volunteer fire fighters for larger fires.	Staff Time	Dept. Budget	Local Fire Depts / WDNR	On-going	Medium
20 Support establishment of Firewise Communities across the County, such as in the Town of Quincy	Staff Time	Dept. Budget	WDNR/County / All Towns	On-going	Medium
21 Develop Community Wildfire Protection Plans in high risk Towns.	\$20,000 ea.	WDNR National Fire Plan funding	County / City / Village / All Towns	2023	Medium
DROUGHT / EXTREME HEAT					
22 Promote heat hazards awareness, including protecting oneself and watching out for others.	Staff Time	Dept. Budget	County EM Dept.	On-going	Medium
23 Encourage farmers that irrigate to use irrigation scheduling programs and drip/misting systems	Staff Time	Dept. Budget	UW-Ext Dept / LWCD	On-going	Medium
24 County should be prepared on how to inform farmers during time of drought.	Staff Time	Dept. Budget	UW-Ext. Dept.	On-going	Low
25 Inform farmers on purchasing crop insurance.	Staff Time	Dept. Budget	UW-Ext. Dept./FSA	On-going	Low

Mitigation Measures		Cost Estimate	Existing and Potential Resources to Implement	Responsible Units	Project Timeframe	Priority Level
FLOOD / DAM FAILURE						
26	Mitigate impacts of flooding through acquisition/demolition of homes in the floodplain when flood damaged.*	Costs to be determined	Mitigation Grants	EM Dept. P&Z Dept.	As needed	Medium
27	Continue development of new / updated Emergency Action Plans (EAP) for all large dams, with priority on those w/ significant or high hazard rating. Identify rehabilitation needs of high hazard dams.	Costs to be determined	Dept. Budget / NRCS Funding Programs	LWCD	On-going	High
28	Conduct comprehensive flood/ hydrology study for Town of Big Flats. Seek Corps of Engineers assistance - possible extension of Southern Wood - Northern Juneau study. May be applicable to broader area.	Costs to be determined /staff time + COE resources	US Army Corps of Engineers Technical Assistance Program	Town of Big Flats / surrounding towns - Corps of Engineers	TBA - subject to Corps schedule	High
29	Improve ditching and culverts along town roads in Jackson, Quincy, Richfield and other towns as appropriate to better manage water and control flooding.	Costs to be determined	General Funds	Towns of Jackson, Quincy, Richfield & others were needed	On-going	High
30	Conduct drainage study for the City of Adams to determine best management practices for City to manage stormwater to reduce flooding within City.	Costs to be determined	General Fund	City of Adams	2022	Medium
31	County/City/Village continued compliance in the National Flood Insurance Program - NFIP.*	Staff Time	Dept. Budget	County / City / Village	On-going	Medium
32	Do public education and information regarding dam function and operations in Adams County.	Staff Time	Dept. Budget	Dam Owners / County LWCD Dept.	On-going	Low
SEVERE THUNDERSTORM / HAIL / LIGHTNING / WIND						
33	Promote the planting of windbreaks to protect farmsteads, buildings & open fields from high winds	Staff Time	NRCS funding programs	LWCD and NRCS	On-going	Medium
34	Enforce local building codes to improve structures' ability to withstand greater wind velocities	Staff Time	Dept. Budget	County P&Z Dept	On-going	Medium
35	Promote public awareness of proven lightning safety guidelines to reduce risk	Staff Time	Dept. Budget	County EM Dept	On-going	Low
HAZARDOUS MATERIALS INCIDENTS						
36	Implement recommendations within Hazardous Materials Commodity Flow Study regarding precautions and planning to address the presence of acutely hazardous materials moving through Adams County.	Costs to be determined	General Fund and HMEP/ Mitigation Grants	County EM Dept	On-going	Medium
37	Do preplanning and training exercise for local fire depts to deal w/ special situations: hospital O2 tanks, COOP anhydrous ammonia, etc.	Costs to be determined	WEM Training Funds and HMEP	County / City / Village / All Towns	2023	High

* Denotes actions related to compliance with NFIP.

** Actual project implementation depends on funding and staff availability.

INTRODUCTION

Part V of the Adams County All Hazards Mitigation Plan Update describes the plan adoption, implementation, and evaluation and maintenance.

PLAN UPDATE ADOPTION

The adoption of the Adams County All Hazards Mitigation Plan Update lends itself to serve as a guiding document for all local government officials. It also certifies to program and grant administrators from the FEMA and WEM that the plan's recommendations have been properly considered and approved by the governing authority and the jurisdiction's citizens. Finally, it helps to ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions about the community's future.

Before adoption of the Plan Update by the incorporated areas, the update must be sent to the state and federal level to verify that all DMA2K requirements are met. Once a draft of the updated Plan has been completed, it is submitted to the State Hazard Mitigation Officer (SHMO) at the state level at WEM. Previous drafts of the update have already been reviewed prior to this submittal. The SHMO will determine if the updated Plan meets DMA2K and/or other state program requirements. Upon approval of the draft by WEM, the SHMO is responsible for showing the update to the FEMA Region V Office for review.

Prior to final approval by WEM and FEMA, the update must be formally adopted by Adams County and its incorporated areas by resolution. Incorporated communities that do not adopt the Plan Update cannot apply for mitigation grant funds unless they opt to prepare, adopt, and submit their own plan. Adoption of the Plan Update gives the jurisdiction a legal basis to enact ordinances, policies, or programs to reduce hazard losses and to implement other mitigation actions.

All general purpose units of government (i.e. city, village, towns) within Adams County were offered one or more avenues to participate in the development of this Plan Update. Adoption of the Plan by a local unit of government certifies their participation. The Adams County Board has adopted this Update. Resolutions of adoption are contained in APPENDIX B.

PLAN UPDATE IMPLEMENTATION**Administrative Responsibilities**

Once the Plan Update has been approved, stakeholders must be informed. The County Emergency Management Director will distribute copies to stakeholders. The County will make the Plan Update available to the public by linking the report on the Internet.

Along with monitoring the progress of the action projects, the County Emergency Management Director and Public Safety and Judiciary Committee should also work to secure funding to implement the Plan Update. State and federal agencies, nonprofit organizations, and foundations continually make grants available. Emergency Management should research these grant opportunities to determine eligibility for the County and its local units of government.

When implementing this Plan Update, the County Public Safety and Judiciary Committee and staff team should consider innovative ways to involve active participation from nonprofit organizations, businesses, and citizens to implement the Update. The relationship between these groups will result in greater exposure of the Plan Update and provide greater probability of implementation of the action projects listed.

The role of department administrators, elected officials, and local administrators are to ensure that adopted actions from Part IV are considered in their budgets. It is understood that projects may not be carried out as they are scheduled in Part IV due to budget constraints. However, since many of these action projects are considered an investment in safeguarding the publics' health, safety, and property, they should be carefully considered as a priority.

Promote Success Of Identified Projects

Upon implementing a project covered by this Plan Update, it is important to promote the accomplishment to the stakeholders and to the communities. This will help inform people that the update is being implemented and is effective.

Community Disaster Resilience

There has been a growing movement in emergency management planning circles toward a "new" buzz word: resilience. There is a wide range of definitions for community resilience and what it entails, but in 2012 the National Academy of Sciences looked at the major federal agencies and independent organizations with work efforts related to resilience and determined that *"resilience is the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. Enhanced resilience allows better anticipation of disasters and better planning to reduce disaster losses—rather than waiting for an event to occur and paying for it afterward."*

Many weather experts now expect severe weather events to become increasingly more frequent and intense. Recent events seem to corroborate this condition with multiple "short duration - high volume" rainfalls causing devastating flooding around the state in 2015, 2016, 2017 and 2018. Adams County has experienced much of this first hand along with many of its fellow counties with significant flooding in each of the past three years.

It is recommended that the County acknowledge these changing conditions and begin working toward an approach to incorporating a community resilience

component into its planning and operations. County could coordinate with the City of Adams and its other local units of government on resiliency efforts.

Incorporation Into Other Local Planning Mechanisms

FEMA requires a process by which the mitigation plan is incorporated into other planning mechanisms where appropriate. When undergoing any planning process, County departments, local units of government and/or any professional staff assisting them, typically review and incorporate any related pre-existing plans as a matter of course. However, to help ensure this outcome, Adams County has established a two-part process to incorporate the All Hazards Mitigation Plan into other County and local planning efforts as follows:

- Notification of County Departments and Local Units of Government - Upon adoption of the All Hazards Mitigation Plan, the County EM Director will distribute a letter that explains how the Plan applies to other planning efforts they might undertake and how to obtain copies of the Mitigation Plan.
- Promotion by EM Director - The EM Department will promote incorporation of the All Hazards Mitigation Plan as the EM Director is made aware of or becomes a participant in any new planning process.

A number of upcoming planning efforts have been identified for incorporation of the updated All Hazards Mitigation Plan. Upcoming planning efforts at the County or local levels include: updates to local unit Comprehensive Plans.

Currently, the County's All Hazard Mitigation Plan is already incorporated into another planning process, the Adams County Comprehensive Plan, as follows.

Adams County Comprehensive Plan

The following concepts will be considered when developing the Adams County Comprehensive Plan Update, based on the nine elements of the Wisconsin comprehensive planning law:

- *Issues and Opportunities Element* – a summary of major hazards local government is vulnerable to, and what is proposed to be done to mitigate future losses from the hazards.
- *Housing Element* – an inventory of the properties that are in the floodplain boundaries, the location of mobile homes, recommendation on building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.
- *Utilities and Community Facilities Element* – identify critical facilities such as shelter, schools, medical, water infrastructure, etc. and make recommendations on how to mitigate specific risk factors
- *Transportation Element* – identify any transportation routes or facilities that are more at risk during flooding, winter storms, or hazardous material spills.

- *Agricultural, Natural Resources, and Cultural Resources Element* – identify the floodplains and agricultural areas that area at risk to hazardous events. Incorporate recommendations on how to mitigate future losses to agricultural areas.
- *Economic Development Element* – describe the impact past hazards have had on County and municipal business.
- *Intergovernmental Cooperation Element* - identify intergovernmental police, fire, and rescue service sharing agreements that are in effect, or which may merit further investigation, consider cost-sharing and resource pooling on government services and facilities.
- *Land Use Element* - describe how flooding have impacted land uses and what is being done to mitigate negative land use impacts from flooding; map and identify hazard areas such as floodplains, hazardous materials areas, and soils with limitations.
- *Implementation Element* – have action plans from this Plan implemented into comprehensive plans.

PLAN UPDATE EVALUATION AND MAINTENANCE

Planning is an ongoing process. Because of this, this document should grow and adapt in order to keep pace with growth and change of the County and its local jurisdictions. DMA2K requires that local plans be evaluated and updated at least every five years to remain eligible for assistance.

The Plan will be reviewed and evaluated on an annual basis as needed by Emergency Management. The Adams County Emergency Management Director will evaluate incoming information against the contents of the Plan to determine possible need for revisions; and bring that information to the County Public Safety and Judiciary Committee to discuss the evaluation and potential revisions to the Plan as needed. The Emergency Management Director is encouraged to consult/coordinate with the NCWRPC in the event of any revision.

The Plan must also be evaluated and revised following disaster events to determine if the recommended actions are appropriate given the impact of the event. The risk assessment (Part III) should also be reviewed to see if any changes are necessary based on the pattern of disaster damages.

Full updates are required every five years. As a result, every fifth year, the review will be expanded to an overall plan update to meet FEMA requirements. All stakeholders and the public will again be involved in the update process. The County will conduct a survey and open comment meeting. This also provides an opportunity to inform on the progress of any projects.

The County Public Safety and Judiciary Committee and County Board must approve all changes and updates to the Plan.

Appendix A – Meeting Notices

ADAMS COUNTY BOARD OF SUPERVISORS AGENDA

Adams County Community Center by Teleconference August 18, 2020 6:00 p.m.

Phone: 312 626 6799

Meeting ID: 889 2849 4180

Password: 151810

1. Call to Order by the Chairman
2. Was the meeting properly announced?
3. Moment of Silence
4. Pledge of Allegiance
5. Roll Call
6. Approve agenda
7. Approval of [July 21, 2020](#) County Board minutes
8. Announcement of meetings, report of Supervisors claims read by the County Clerk and appoint six (6) Supervisors to approve claims: Zelenski, Schappe, Allen, Bork, Borud and Carlson.
9. **Claims:** None
10. **Correspondence:** None
11. **Appointments:**
 - Chairman West to appoint a new Supervisor to the District 13 vacant seat position, replacing Florence Johnson, term ending April, 2022.
 - Appoint Samantha Hicks to replace Melissa Winsor on Coordinated Services.
12. **Unfinished Business:** None
13. **Reports and Presentations:**
 - A. Miscellaneous:
 - Daric Smith, ACED [report](#)
 - County Manager/Administrative Coordinator report

14. Review Committee Minutes

Admin & Fin 7/13 Airport 6/23 BOA 7/13	Coordinated Services 7/14 County Board 7/21	Employee Benefit 8/5 Health & Human 7/13 Highway 7/9	L&W UWEX 7/14 Property 7/14 Solid Waste 7/14
--	---	--	--

15. **Ordinances:**

Ord #16: Rezoning request of 34.92 acres changed from A1-35 to A3 & A1-15, portion of the property located in the NW ¼, NE ¼, NE ¼, NW ¼, SW ¼, NW ¼, SE ¼, NW ¼, Lot 1 of CSM 5551, Section 12, Township 14 N, Range 7 E, Town of New Haven, Adams County, Wisconsin.

Ord #17: Rezoning request of 3 acres changed from A1-35 to A1-15, portion of the property located in the SE ¼, NW ¼, NW ¼, SW ¼, NE ¼, NW ¼, SE ¼, Section 8, Township 15 N Range 6 E, Lot 1 of CSM 4539, 4527 & 4565, Town of Springville, Adams County, Wisconsin.

Ord #18: Rezoning request of 10.39 acres changed from R3 to A3, portion of the property located in the SE ¼, SW ¼, Section 16, Township 16 N, Range 6 E, Town of Easton, Adams County, Wisconsin.

16. **Resolutions:**

Res #22: Adopting the Adams County All Hazards Mitigation Plan Update.

17. **Denials:** None

18. **Petitions:** None

19. Approve Claims

20. Approve Per Diem and Mileage

21. Motion for County Clerk to correct any and or all errors, and to read back at the next meeting, if so requested.

22. Set next meeting date(s)

23. Adjournment

Public Safety & Judiciary Committee

Monday, August 10, 2020 8:30 AM
Community Center by Teleconference

Phone: 312 626 6799

Meeting ID: 892 2554 1306

Password: 173503

1. Call meeting to order;
2. Was the meeting properly noticed;
3. Roll call;
4. Approve agenda;
5. Approve minutes from the [July 8, 2020 meeting](#);
6. Correspondence;
7. District Attorney– Tania Bonnett and/or Rebecca Maki-Wallander - Attending:
Discuss expenditure [report](#);
Operations update;
Staffing update;
Summer internship program;
Discuss and/or act on [2021 proposed budget](#);
8. Child Support – Janet Leja - Attending:
Review performance measures;
Review check [summary/expenditures](#);
Discuss general operations of department;
Discuss and/or act on [2021 proposed budget](#);
9. Clerk of Circuit Court – Lori Banovec - Attending:
Discuss monthly written [report](#);
Discuss monthly expenditure report;
Discuss and/or act on [2021 proposed budget](#);
10. Register in Probate – Chris Langer - Not Attending:
Discuss monthly written [report](#);
Discuss monthly expenditure report;
Discuss and/or act on [2021 proposed budget](#);
11. Emergency Management – Jane Gervais - Attending:
Discuss monthly written [report](#);
Discuss monthly expenditure report;
North Central Wisconsin Regional Planning Commission will provide a brief presentation on the Adams County All Hazards Mitigation Plan Update;
Discuss and/or approve the [All Hazards Mitigation Plan Update and the Resolution to Adopt the Adams County All Hazards Mitigation Plan Update](#);
Discuss and/or act on [2021 proposed budget](#);
12. Medical Examiner – Marilyn Rogers - Attending:
Discuss monthly written [report](#);
Discuss monthly expenditure report;
Discuss and/or act on [2021 proposed budget](#);
13. Sheriff's Office – Sheriff York and/or Chief Deputy Carlson - Attending:
Discuss monthly written [report](#);
Discuss monthly expenditure report;
Discuss and/or act on [2021 proposed budget](#);
14. Approval of all vouchers and monthly expense reports;
15. Identify upcoming agenda items;
16. Set next meeting date;
17. Adjournment

Note: Persons requiring disability - related modification or accommodation to participate in this public meeting should contact (608)339-4200.

Amended Public Safety & Judiciary Committee

Wednesday August 14th, 2019

9:00 a.m. – Conference Room A260

Agenda

1. Call the meeting to order
2. Was the meeting properly announced?
3. Roll Call
4. Approve the agenda
5. Approve minutes from the [July 10, 2019](#) and the [July 25, 2019](#) meeting
6. Public participation (*If requested by the Committee Chair*)
7. Correspondence
8. [District Attorney– Tania Bonnett and/or Rebecca Maki-Wallander – Attending](#)
 Discuss expenditure report
[Review/act on contract for ADA funding](#)
 Discuss and/or act on 2020 proposed budget
9. [Child Support – Janet Leja – Not Attending](#)
 Discuss monthly written report
[Discuss and/or act on 2020 proposed budget](#)
10. [Clerk of Circuit Court – Lori Banovec – Attending](#)
 Discuss monthly written report
 Discuss monthly expenditure report
[Discuss and/or act on 2020 proposed budget](#)
11. [Register in Probate – Chris Langer – Attending](#)
 Discuss monthly written report
 Discuss monthly expenditure report
[Discuss and/or act on 2020 proposed budget](#)
12. [Emergency Management – Jane Gervais – Attending](#)
 Discuss monthly written report
 Discuss monthly expenditure report
[North Central Wis. Regional Planning Commission to provide a status report on the All Hazards Mitigation Plan update](#)
[Discuss and/or act on 2020 proposed budget](#)
13. [Medical Examiner – Marilyn Rogers – Attending](#)
 Discuss monthly written report
 Discuss monthly expenditure report
[Discuss and/or act on 2020 proposed budget](#)
14. [Sheriff's Office – Sheriff York – Attending](#)

Any person wishing to attend who, because of a disability, requires special accommodation should contact the Sheriff's Office at 608-339-3304 at least 24 hours before the scheduled meeting time so appropriate arrangements can be made.

NOTE: This is a public meeting. As such, all members or a majority of the members of the County Board may be in attendance. While a majority of the County Board members, or the majority of any given County Board Committee may be present, only the above committee will take official action based on the above agenda.

Discuss monthly expenditure report
Discuss general operations of department
Discuss and/or act on the use of Spillman Managed Services
[Discuss and/or act on 2020 proposed budget](#)

15. The Committee may convene in closed session per Wis. Stats. §19.85(1)(c) for purposes of considering employment, promotion, compensation or performance evaluation data of any public employee over which the governmental body has jurisdiction or exercises responsibility. Discuss and/or act on appointment of a Chief Deputy Sheriff.
16. The Committee will reconvene in open session per Wis. Stats. §19.85(2), to consider and vote on appropriate matters.
17. Approval of all vouchers and monthly expense reports
18. Identify upcoming agenda items
19. Set next meeting date
20. Adjournment

Any person wishing to attend who, because of a disability, requires special accommodation should contact the Sheriff's Office at 608-339-3304 at least 24 hours before the scheduled meeting time so appropriate arrangements can be made.

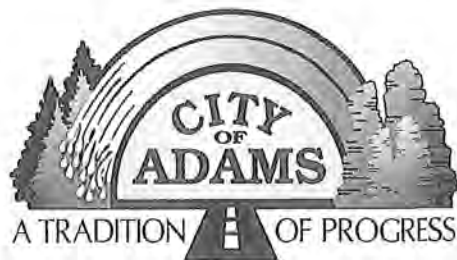
NOTE: This is a public meeting. As such, all members or a majority of the members of the County Board may be in attendance. While a majority of the County Board members, or the majority of any given County Board Committee may be present, only the above committee will take official action based on the above agenda.

Adams County All Hazards Mitigation Plan Update

City of Adams Planning Meeting SIGN-IN

July 15, 2019 - 6:00 PM

	Name	Representing?	Email (Optional)
1	Scott Schler	Adams Police Dept	
2	Bob Berry	city of Adams Plw	
3	Janet Winters	" "	
4	Cindy Scott	" "	
5	Julie Goodhue	" " " council	
6	Roberta Pantaleo	" " mayor	
7	Dawn Hanson	City of Adams Council	
8	Janet White	City of Adams Council	
9	Matthew Robinson	City of Adams Council	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			



**City Council
Regular Session
July 15, 2019
6:00 p.m.
City Municipal Building**

- I. Call to Order**
 - II. Pledge of Allegiance**
 - III. Roll Call**
 - IV. Approval or Correction of Minutes for the Meeting Held on July 1, 2019 - Regular Session**
 - V. Petitions and Communications – Citizen Comment**
 1. Discussion of Any Topic Brought Before the Council During Petitions and Communications
 - VI. Report of Standing Committees**
 - Public Works Committee (Scott)
 - Policy & Procedure (Hanson)
 - VII. Report of City Officers**
 1. Mayor
 2. Police Department Update
 3. Public Works Department Update
 - VIII. New Business**
 1. Discussion/Update on County-Wide Hazard Mitigation Plan - Presentation by NCWRPC
 2. Approve Pay Request No. 8- Springlake Contracting
 3. Approve Transfer of Community Housing Block Grant (CDBG) Program
 4. Introduce/Adopt Ordinance 04-2019 Septage Waste Volume Impact Rates 9-2-25
 5. Introduce/Adopt Ordinance 05-2019 Amending Licensing of Dogs and Late Fees 7-1-3(c) and 7-1-4
 6. Introduce/Adopt Ordinance 06-2019 Amending Taxicabs and Taxicab Driver License Fees 7-11-1(f) and 7-11-1(m)(2)
 7. Introduce/Adopt Ordinance 07-2019 Amending Operator's License Duration 7-2-32
 8. Introduce/Adopt Ordinance 08-2019 Rescinding and Recreating Sex Offender Residency Restrictions and Child Safety Zones – Title 5, Chapter 5
 9. Introduce/Adopt Resolution 2019-19R Rescinding Resolution 2009-14R Use of Time Clocks
 10. Introduce/Adopt Resolution 2019-20R Relating to Fee Schedule
 11. Introduce/Adopt Resolution 2019-21R Relating to Revised Outdoor Recreation Plan (ORP)
 12. Introduce/Adopt Resolution 2019-22R Relating to Fire District-Mutual Aid Box Alarm System (MABAS)
 13. Approve Compensation for Sludge Application – Bruce Marti
 14. Approve ATV/UTV Parking on Lot Adjacent to Public Works Building
 15. Approve Purchase of DO Analyzer
 16. Approve Purchase of Haul Truck
 17. Approve Payment of Bills
 - IX. Adjourn**
- Immediately following adjournment, the Common Council may tour City owned parcels: Well Houses, Water Tower, Wastewater Treatment Plant, City Lots, Alleys and Streets. A quorum of the Common Council may be present, however no Council action will be taken.**

Deviation from listed order may occur

(Persons requiring additional services to participate in any public meeting should contact the Clerk/Treasurer's Office at (608) 339-6516 for assistance prior to the meeting.)

101 North Main Street, P.O. Box 1009, Adams, WI 53910

adamsct@maqs.net

Telephone 608-339-6516, Fax 608-339-8170

Adams County All Hazards Mitigation Plan Update

Agency and Interest Group Meeting SIGN-IN

July 8, 2019 - 2:30 PM

	Name	Department/Organization	Email
1	DAVID JOHNSON	HIGHWAY / ADAMS CO.	david.johnson@co.adams.wi.us
2	Patrick Pare	Hwy Dept / Adams Co.	patrick.pare@co.adams.wi.us
3	Dave Carlson	Sheriff's Office Adams Co.	dave.carlson@co.adams.wi.us
4	Josh Sanders	Enbridge	Joshua.Sanders@enbridge.com
5	Leah Eckstein	Adams Co. HHS	leah.eckstein@co.adams.wi.us
6	Brady Backes	WI DNR Fire	Brady.backes@wisconsin.gov
7	Patrick Koroluk	Hwy / Adams Co	pkoroluk@co.adams.wi.us
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Adams County All Hazards Mitigation Plan Update

Agency and Interest Group Meeting SIGN-IN

July 8, 2019 - 2:30 PM

	Name	Department/Organization	Email
1	Kirk Gribble	Alliant Energy	kirk.gribble@alliantenergy.com
2	Jon Gessner	ACBC	jgessner@acecwi.com
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			



Adams County Emergency Management

400 Main Street PO Box 144
Friendship WI 53934-0144

emmgmt@co.adams.wi.us

Telephone 608-339-4248
FAX 608-339-4299

MEMORANDUM

TO: Government agencies, County department staff, and other private or non-profit organizations within Adams County

FROM: Jane Gervais, Director - Adams County Emergency Management *JG*

DATE: June 18, 2019

RE: Adams Co. All-Hazards Mitigation Plan Update Interest Group Meeting Notice

Adams County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its All-Hazards Mitigation Plan to protect the health and safety of residents from the impacts of natural hazards and to minimize and prevent damages caused by these events. The North Central Wisconsin Regional Planning Commission (NCWRPC) is assisting Adams County with this plan.

As a requirement of the planning process, an opportunity to be involved in the process must be provided to local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as business, academia and private and non-profit interests. To meet this requirement, an agency and interest group meeting is scheduled for the following date and place:

When: Monday, July 8, 2019 at 2:30 p.m.
Where: Adams County Courthouse - Conference Room A260
400 Main Street, Friendship, Wisconsin

In addition to meeting FEMA requirements, this meeting will be a way to gather ideas on how to safeguard the residents and visitors of Adams County and protect property in the event of natural disasters. Since you live and/or do business in or around Adams County, your input in this process is very valuable.

Please call or email our planner, Darryl Landeau at the NCWRPC, if you have any questions regarding this meeting. His number is 715-849-5510 ext. 308, and his email is dlandeau@ncwrpc.org. Or, contact me at 608-339-4248 or emmgmt@co.adams.wi.us.

I highly encourage at least one staff person from your department or agency with responsibilities relating to or potentially impacted by natural hazards / disaster to attend.

Thank you.

Tim Clemens, CEO
WI River Coop
P.O. Box 729
Adams, WI 53910

Kason Morley
Adams Co. Land Conservation
P.O. Box 287
Friendship, WI 53934

Adams County Parks
P.O. Box 196
Friendship, WI 53934

Adams Co. Chamber of Commerce
636 South Main Street
Adams WI 53910

Daric Smith, Executive Director
Adams County EDC
P.O. Box 236
Friendship, WI 53934

Scott Schlei, Commander
City of Adams Police Dept
PO Box 1125
Adams, WI 53910-1125

Adams County Housing Authority
350 E Liberty Street
Adams, WI 53910

Leah Eckstein
Adams Co. Public Health Officer
108 E. North St.
Friendship, WI 53934-0500

City of Wisconsin Dells
Attn: Brian Landers, Mayor
PO Box 655
Wisconsin Dells, WI 53965

Gerry Parks
ARES/RACES
1861 Hwy. 13
Friendship, WI 53934

Frank Perez-Guerra
Chief Executive Officer
Gundersen Moundview Hospital
P.O. Box 40
Friendship, WI 53934

LifeStar Emergency Medical Serv.
P.O. Box 113
West Bend, WI 53095

John West, Chair
Adams Co. Board
P.O. Box 278
Friendship, WI 53954

Casey Bradley, Admin. Coordinator
Adams County
P.O. Box 102
Friendship, WI 53934-0102

Pat Kotlowski, Commissioner
Adams Co. Hwy Dept.
1342 County Road F
Adams, WI 53910

Darin Kurth
Adams Co. Fire District
P.O. Box 735
Adams, WI 53910-0735

Chief Dick Meyers
Big Flats Fire Department
1108 County Road C
Arkdale, WI 54613

Coloma Fire Department
ATTN: Fire Chief
P.O. Box 91
Coloma, WI 54930-0091

Hancock Fire Department
ATTN: Fire Chief
P.O. Box 199
Hancock, WI 54943-0199

Chief Dennis Leist
New Chester Fire Department
P.O. Box 64
Grand Marsh, WI 53936-0064

Chief Tim Houslet
Oxford Fire Department
P.O. Box 211
Oxford, WI 53952-0211

Plainfield Fire Department
ATTN: Fire Chief
P.O. Box 352
Plainfield, WI 54966-0352

Garin Gavinski
Chief, Quincy Fire Department
2599 County Road Z
Friendship, WI 53934

George Taub
Chief, Rome Fire Department
1156 Alpine Drive
Nekoosa, WI 54457

Laurie Carlson, Director
Villa Pines Nursing Home
201 S Park St
Friendship WI 53934

Kilbourn Fire Department
ATTN: Fire Chief
P.O. Box 689
Wisconsin Dells, WI 53965-0689

John Schwingel
Dept. of Natural Resources
P.O. Box 100
Friendship, WI 53934-0100

Brent York
Sheriff, Adams Co. Sheriff's Office
P.O. Box 279
Friendship, WI 53934-0279

Chief Jason Lauby
Town of Rome Police
1156 Alpine Dr.
Nekoosa, WI 54457

Federal Correctional Institution
ATTN: Emergency Preparedness
P.O. Box 500
Oxford, WI 53952

Donna Richards, Director
Adams County Aging
569 N. Cedar St., Suite 4
Adams, WI 53910

Community Service Coordinator
Carrie Allard
P.O. Box 220
Friendship, WI 53934

Alliant Energy
338 E State St
Mauston WI 53948

WE Energies
231 W Michigan St
Milwaukee WI 53203

Randy Theisen
Theisen Lumber
3328 State Road 13
Wisconsin Dells WI 53965

Michael Kaminski
Chula Vista Resort
2501 N River Rd
Wisconsin Dells WI 53965

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County HHS
Kelly Oleson, Director
108 E. North St.
Friendship, WI 53934

Adams Co. UW-Extension
569 N. Cedar Street, Suite 3
Adams, WI 53910

Pioneer Power Co.
PO Box 309
Westfield WI 53964

Solarus Telephone Co.
PO Box 8045
Wisconsin Rapids WI 54494

Galen Manternach, CEO
Terrace Homes
1553 11th Dr
Friendship WI 53934

Dusty Grant, Administrator
Adams County Planning & Zoning
P.O. Box 187
Friendship, WI 53934

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Terri Leece
Salvation Army
179 North Court
Nekoosa, WI 54457

Jay Porter, CEO
Adams-Columbia Electric
Cooperative
P.O. Box 70
Friendship, WI 53934-0070

Enbridge/Lakehead Pipeline
4898 Young Rd
Vesper WI 54489

Marquette Adams Telephone Co.
PO Box 45
Oxford WI 53952

Steve Reise, Manager
Grande Custom Ingredients
1007 W Lake St
Friendship WI 53934

Becky Haase
Sr. Community Engagement
Advisor, Enbridge
119 North 25th St., East
Superior, WI 54880

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County Emergency Mgmt
PO Box 144
Friendship, WI 53934-0144

Adams County All Hazards Mitigation Plan Update

Village of Friendship Planning Meeting SIGN-IN

July 1, 2019 - 6:00 PM

	Name	Representing?	Email (Optional)
1	Ernest Kliche	V of F	
2	Justin H. Sindler	Village of Friendship	
3	John R. Jovan	V of Fr.	
4	Macy E. Kuhnle	Village of Friendship	marmstrong@mags.net
5	Ron Doyle	Village of Friendship	Pres.
6	Nicholas Hansen	Village of Friendship	
7	Bob Kryszyk	V of F	
8	Joe Perkins	V of F	
9	Jason Pire	Village of Friendship	
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

VILLAGE OF FRIENDSHIP
P.O. BOX 206 507 WEST LAKE STREET
FRIENDSHIP, WI 53934
PHONE (608) 339-3243 FAX (608) 339-4763

June 20, 2019
Times-Reporter Publications
P.O. Box 99
Adams, WI 53910

NOTICE
VILLAGE OF FRIENDSHIP

The *Finance/Personnel Committee* will meet on **MONDAY, July 1, 2019 at 5:30 p.m.** in the Municipal Building.
Agenda:

- 1} Review Vouchers for Payment

MONTHLY VILLAGE BOARD MEETING

The Friendship Village Board will hold their monthly meeting on **MONDAY, July 1, 2019 at 6:00 p.m.** in the Municipal Building. *Agenda:*

- 1} Call to Order/Roll Call
- 2} Approval of June 3, 2019 Board Meeting Minutes
- 3} Treasurer Report
- 4} Approval of Bills
- 5} Citizen Input
- 6} Hear & Consider Request to Waive the Park Rental Fee for the Night Market – Val Edwards
- 7} Darryl Landeau of North Central WI Regional Planning Commission Present to Discuss County Wide Hazard Mitigation Plan
- 8} Discussion and Action on Lease Agreement for the Emergency Command Center – Jane Gervais
- 9} Update & Possible Action on Joint Meeting with the City of Adams Regarding Possible Soccer Field at the Old Landfill Site & Planning for Future Park Street Repairs
- 10} Discussion & Possible Action to Approve Direct Deposit for Tax Settlement Monies
- 11} Discussion & Possible Action on Notice of Claim from Frontier & Status of Alliant Energy Claim
- 12} Presentation & Possible Discussion on 2018 Financial Report, Communication to Those Charged with Governance & Management and TIF Reports Prepared by Baker Tilly
- 13} Discussion & Possible Action to Adopt ATV/UTV/Snowmobile Ordinance
- 14} Public Works Committee Report ie: Klicko discussion on Timer for Siren – Update on Drive Around: Address Nuisance Properties – Discussion on Storm Drain/Manhole Cover on Roberts Street – Discussion on Outside Services for Park & Beach Cleanup on Weekends – Discussion on Street Striping for HWY 13 – Update on DNR Permit Approval for the Boat Ramp Project – Update on List of Repair Prices for the Beach & Park Upgrades
- 15} Approval of Operators Licenses & Soda Licenses
- 16} Friendship Lake District Report by Trustee L. Parlow
- 17} Fire District Report by Trustee J. Pierce
- 18} Ambulance Report by Trustee T. Sindelar
- 19} Correspondence
- 20} Establish August Agenda Items
- 21} Adjournment

Macy Kuhnke,
Deputy Clerk/Treasurer II

Emailed To: Times-Reporter Publications ✓
Dave Kennedy✓
Posted✓

Adams County All Hazards Mitigation Plan Update

Public Informational Meeting SIGN-IN

July 1, 2019 - 4:30 PM

	Name	Area of Residence	Email
1	Darryl London	NWRC	d.london@nwrc.org
2	Jane Gervais	Adams Cty. Emergency Management	emmgmt@co.adams.wi.us
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

HAZARD MITIGATION PLAN

Affidavit of Publication

STATE OF WISCONSIN }
COUNTY OF ADAMS } SS

Shari Montino, being duly sworn, says:

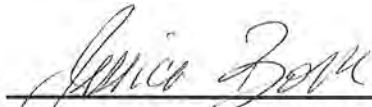
That she is an authorized representative of the Adams Friendship Times-Reporter, a weekly newspaper of general circulation, printed and published in Adams, Adams County, Wisconsin; that the publication, a copy of which is attached hereto, was published in the said newspaper on the
June 26, 2019

That said newspaper was regularly issued and circulated on those dates.

SIGNED:



Subscribed to and sworn to me this 26th day of June 2019.



Jessica Bork, Notary Public, State of Wisconsin, Adams County, Wisconsin

My commission expires: July 09, 2022

of Lines _____ # of Weeks Published _____

Printers Fee \$ _____ Proof of Publication \$ _____

Total \$ 25.05

-or- See monthly invoice for cost ☒

Received Payment _____

99123028 00448280

ATTN: DARRYL L LANDEAU/AICP SR PLANNER
NORTH CENTRAL WI REG PLANNING COMM
210 McCLELLAN ST STE 210
WAUSAU, WI 54403

ADAMS COUNTY HAZARD MITIGATION PLAN PUBLIC INFORMATIONAL MEETING

Notice is hereby given by the Adams County Emergency Management Department that there will be a public informational meeting at the Adams County Courthouse – Room A260, 400 North Main St., Friendship on Monday, July 1, 2019 from 4:30 to 5:30 pm to discuss the County's All Hazards Mitigation Plan Update. Note: after hours use back entrance on east side of building.

The meeting will be an open house format and provide information about the natural hazards that can affect the County and the strategies being developed to mitigate against future losses and reduce public expenditure for response and recovery. A copy of the plan material can be reviewed on the web at <http://www.ncwrpc.org/counties/Adams/AdamsHzdPlan.html>.

All interested parties are encouraged to attend. Contact Adams County Emergency Management Director Jane Gervais at 608-339-4248 for more information.

Publish: 6/26/19 **WNAXLP**



Appendix B – Resolutions of Plan Update Adoption

RESOLUTION # 22 -2020

ADOPTING THE ADAMS COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

INTRODUCED BY: Public Safety and Judiciary Committee.

INTENT & SYNOPSIS: To adopt the Adams County All Hazards Mitigation Plan Update as an official plan and forward to Wisconsin Emergency Management and Federal Emergency Management officials for final review and approval.

FISCAL NOTE: None.

WHEREAS: Adams County recognizes the threat that natural hazards pose to people and property; and

WHEREAS: under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS: an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS: all hazard mitigation plans are required to be updated every 5-years; and

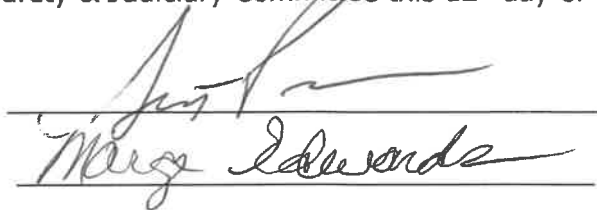
WHEREAS: the County of Adams adopted the last 5-year All Hazards Mitigation Plan Update on August 18, 2015; and

WHEREAS: Adams County participated jointly in the planning process with the other local units of government within the County to prepare an update to its All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED: that the Adams County Board of Supervisors, hereby adopts the Adams County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED: that the Adams County Emergency Management Department will submit, on behalf of the participating municipalities, the adopted All Hazards Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.


Recommended for adoption by the Public Safety & Judiciary Committee this 12th day of August, 2020.



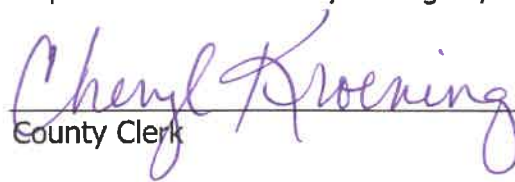
Adopted X

Defeated _____ by the Adams County of Supervisors this 18th day of August, 2020.

Tabled _____



County Board Chair



County Clerk

X Reviewed by Corporation Counsel

X Reviewed by County Manager/Administrative Coordinator

/

RESOLUTION # _____

ADOPTING THE ADAMS COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the City of Adams recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, all hazard mitigation plans are required to be updated every 5-years; and

WHEREAS, the City of Adams adopted the last update of the All Hazards Mitigation Plan on October 19, 2015; and

WHEREAS, the City of Adams participated jointly in the planning process with Adams County and the other local units of government within the County to prepare an update to the county-wide All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Adams Common Council, hereby adopts the Adams County All Hazards Mitigation Plan Update as an official city plan; and

BE IT FURTHER RESOLVED, that the Adams County Emergency Management Department will submit, on behalf of the City of Adams, the adopted All Hazards Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

PASSED:_____.

Certifying Official

RESOLUTION # _____

ADOPTING THE ADAMS COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the Village of Friendship recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS, an adopted all hazards mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, all hazard mitigation plans are required to be updated every 5-years; and

WHEREAS, the Village of Friendship adopted the last update of the All Hazards Mitigation Plan on November 2, 2015; and

WHEREAS, the Village of Friendship participated jointly in the planning process with Adams County and the other local units of government within the County to prepare an update to the county-wide All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Friendship Board of Trustees, hereby adopts the Adams County All Hazards Mitigation Plan Update as an official village plan; and

BE IT FURTHER RESOLVED, that the Adams County Emergency Management Department will submit, on behalf of the Village of Friendship, the adopted All Hazards Mitigation Plan Update to Wisconsin Emergency Management and Federal Emergency Management Agency officials for final review and approval.

PASSED:_____.

Certifying Official

Appendix C – EMSI Job Loss Analysis

Adams County Hazard Mitigation job loss

North Central Wisconsin Regional Planning Commission




210 McClellan Street, Suite 210
Wausau, Wisconsin 54403

Changes to Crop Production

<div>\$-41,138,951</div> <div>Change in Earnings 1.20 Multiplier</div>	<div>-1,208</div> <div>Change in Jobs 1.29 Multiplier</div>	<div>\$34,042</div> <div>Average Earnings Per Job (2013)</div>
--	---	--

















Scenario Results - Industry

NAICS	Industry	Change in Jobs
11	Crop and Animal Production	-1,012 
21	Mining, Quarrying, and Oil and Gas Extraction	0
22	Utilities	0
23	Construction	-22
31	Manufacturing	-1
42	Wholesale Trade	-3
44	Retail Trade	-17
48	Transportation and Warehousing	-9
51	Information	0
52	Finance and Insurance	-13
53	Real Estate and Rental and Leasing	-32
54	Professional, Scientific, and Technical Services	-8
55	Management of Companies and Enterprises	0
56	Administrative and Support and Waste Management and Remediation Services	-11
61	Educational Services	-1
62	Health Care and Social Assistance	-19
71	Arts, Entertainment, and Recreation	-5
72	Accommodation and Food Services	-13
81	Other Services (except Public Administration)	-18
90	Government	-25

Scenario Results - Occupation

SOC	Occupation	Change in Jobs
11-0000	Management Occupations	-545 
13-0000	Business and Financial Operations Occupations	-19 
15-0000	Computer and Mathematical Occupations	-3 
17-0000	Architecture and Engineering Occupations	-2 
19-0000	Life, Physical, and Social Science Occupations	-5 
21-0000	Community and Social Service Occupations	-3 
23-0000	Legal Occupations	-1 
25-0000	Education, Training, and Library Occupations	-10 
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	-8 
29-0000	Healthcare Practitioners and Technical Occupations	-6 
31-0000	Healthcare Support Occupations	-6 
33-0000	Protective Service Occupations	-5 
35-0000	Food Preparation and Serving Related Occupations	-12 
37-0000	Building and Grounds Cleaning and Maintenance Occupations	-29 
39-0000	Personal Care and Service Occupations	-34 
41-0000	Sales and Related Occupations	-51 
43-0000	Office and Administrative Support Occupations	-52 
45-0000	Farming, Fishing, and Forestry Occupations	-313 
47-0000	Construction and Extraction Occupations	-24 
49-0000	Installation, Maintenance, and Repair Occupations	-19 
51-0000	Production Occupations	-11 
53-0000	Transportation and Material Moving Occupations	-49 
55-0000	Military occupations	0 
99-0000	Unclassified Occupation	-1 

Scenario Results - Demographics

Demographics	Change in Jobs
Male 14-18	-19 
Female 14-18	-4 
Male 19-21	-21 
Female 19-21	-7 
Male 22-24	-34 
Female 22-24	-15 
Male 25-34	-127 
Female 25-34	-30 
Male 35-44	-144 
Female 35-44	-47 
Male 45-54	-231 
Female 45-54	-65 
Male 55-64	-195 
Female 55-64	-52 
Male 65-99	-173 
Female 65-99	-45 

Changes to Hotels (except Casino Hotels) and Motels

\$-19,213,446

Change in Earnings
1.19 Multiplier


-775

Change in Jobs
1.17 Multiplier

\$24,779

Average Earnings Per Job (2013)

Scenario Results - Industry

NAICS	Industry	Change in Jobs
11	Crop and Animal Production	0
21	Mining, Quarrying, and Oil and Gas Extraction	0
22	Utilities	0
23	Construction	-9
31	Manufacturing	-1
42	Wholesale Trade	-1
44	Retail Trade	-8
48	Transportation and Warehousing	-2
51	Information	0
52	Finance and Insurance	-5
53	Real Estate and Rental and Leasing	-6
54	Professional, Scientific, and Technical Services	-7
55	Management of Companies and Enterprises	0
56	Administrative and Support and Waste Management and Remediation Services	-11
61	Educational Services	0
62	Health Care and Social Assistance	-7
71	Arts, Entertainment, and Recreation	-4
72	Accommodation and Food Services	-673 
81	Other Services (except Public Administration)	-8
90	Government	-33 ■

Scenario Results - Occupation

SOC	Occupation	Change in Jobs
11-0000	Management Occupations	-45 
13-0000	Business and Financial Operations Occupations	-16 
15-0000	Computer and Mathematical Occupations	-1 
17-0000	Architecture and Engineering Occupations	-1 
19-0000	Life, Physical, and Social Science Occupations	-1 
21-0000	Community and Social Service Occupations	-2 
23-0000	Legal Occupations	-1 
25-0000	Education, Training, and Library Occupations	-11 
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	-8 
29-0000	Healthcare Practitioners and Technical Occupations	-3 
31-0000	Healthcare Support Occupations	-5 
33-0000	Protective Service Occupations	-18 
35-0000	Food Preparation and Serving Related Occupations	-217 
37-0000	Building and Grounds Cleaning and Maintenance Occupations	-222 
39-0000	Personal Care and Service Occupations	-31 
41-0000	Sales and Related Occupations	-29 
43-0000	Office and Administrative Support Occupations	-85 
45-0000	Farming, Fishing, and Forestry Occupations	0 
47-0000	Construction and Extraction Occupations	-9 
49-0000	Installation, Maintenance, and Repair Occupations	-38 
51-0000	Production Occupations	-20 
53-0000	Transportation and Material Moving Occupations	-12 
55-0000	Military occupations	0 
99-0000	Unclassified Occupation	0 


Scenario Results - Demographics

Demographics	Change in Jobs	
Male 14-18	-30	<div></div>
Female 14-18	-41	<div></div>
Male 19-21	-27	<div></div>
Female 19-21	-44	<div></div>
Male 22-24	-22	<div></div>
Female 22-24	-33	<div></div>
Male 25-34	-79	<div></div>
Female 25-34	-78	<div></div>
Male 35-44	-62	<div></div>
Female 35-44	-68	<div></div>
Male 45-54	-61	<div></div>
Female 45-54	-80	<div></div>
Male 55-64	-56	<div></div>
Female 55-64	-36	<div></div>
Male 65-99	-24	<div></div>
Female 65-99	-32	<div></div>

























Changes to Gasoline Stations with Convenience Stores

<p>\$-2,933,519</p> <p>Change in Earnings 1.16 Multiplier</p>	<p>-153</p> <p>Change in Jobs 1.11 Multiplier</p>	<p>\$19,112</p> <p>Average Earnings Per Job (2013)</p>
--	--	---










Scenario Results - Industry

NAICS	Industry	Change in Jobs
11	Crop and Animal Production	0
21	Mining, Quarrying, and Oil and Gas Extraction	0
22	Utilities	0
23	Construction	-1
31	Manufacturing	0
42	Wholesale Trade	0
44	Retail Trade	-139 
48	Transportation and Warehousing	-1
51	Information	0
52	Finance and Insurance	-1
53	Real Estate and Rental and Leasing	-2
54	Professional, Scientific, and Technical Services	-2
55	Management of Companies and Enterprises	0
56	Administrative and Support and Waste Management and Remediation Services	-1
61	Educational Services	0
62	Health Care and Social Assistance	-1
71	Arts, Entertainment, and Recreation	0
72	Accommodation and Food Services	-1
81	Other Services (except Public Administration)	-1
90	Government	-4 ■

Scenario Results - Occupation

SOC	Occupation	Change in Jobs
11-0000	Management Occupations	-3 
13-0000	Business and Financial Operations Occupations	-1 
15-0000	Computer and Mathematical Occupations	0 
17-0000	Architecture and Engineering Occupations	0 
19-0000	Life, Physical, and Social Science Occupations	0 
21-0000	Community and Social Service Occupations	0 
23-0000	Legal Occupations	0 
25-0000	Education, Training, and Library Occupations	-1 
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	-1 
29-0000	Healthcare Practitioners and Technical Occupations	0 
31-0000	Healthcare Support Occupations	0 
33-0000	Protective Service Occupations	-1 
35-0000	Food Preparation and Serving Related Occupations	-12 
37-0000	Building and Grounds Cleaning and Maintenance Occupations	-2 
39-0000	Personal Care and Service Occupations	-1 
41-0000	Sales and Related Occupations	-113 
43-0000	Office and Administrative Support Occupations	-6 
45-0000	Farming, Fishing, and Forestry Occupations	0 
47-0000	Construction and Extraction Occupations	-1 
49-0000	Installation, Maintenance, and Repair Occupations	-6 
51-0000	Production Occupations	0 
53-0000	Transportation and Material Moving Occupations	-5 
55-0000	Military occupations	0 
99-0000	Unclassified Occupation	0 

Scenario Results - Demographics

Demographics	Change in Jobs
Male 14-18	-6 
Female 14-18	-9 
Male 19-21	-5 
Female 19-21	-7 
Male 22-24	-2 
Female 22-24	-5 
Male 25-34	-10 
Female 25-34	-12 
Male 35-44	-11 
Female 35-44	-11 
Male 45-54	-10 
Female 45-54	-28 
Male 55-64	-11 
Female 55-64	-15 
Male 65-99	-3 
Female 65-99	-9 

Changes to Corrugated and Solid Fiber Box Manufacturing

\$-19,378,418

Change in Earnings
1.12 Multiplier


-336

Change in Jobs
1.32 Multiplier


\$57,751

Average Earnings Per Job (2013)

















Scenario Results - Industry

NAICS	Industry	Change in Jobs
11	Crop and Animal Production	0
21	Mining, Quarrying, and Oil and Gas Extraction	0
22	Utilities	0
23	Construction	-4
31	Manufacturing	-255 
42	Wholesale Trade	-2
44	Retail Trade	-7 ■
48	Transportation and Warehousing	-8 ■
51	Information	0
52	Finance and Insurance	-3
53	Real Estate and Rental and Leasing	-2
54	Professional, Scientific, and Technical Services	-6 ■
55	Management of Companies and Enterprises	0
56	Administrative and Support and Waste Management and Remediation Services	-9 ■
61	Educational Services	0
62	Health Care and Social Assistance	-7 ■
71	Arts, Entertainment, and Recreation	-3
72	Accommodation and Food Services	-7 ■
81	Other Services (except Public Administration)	-10 ■
90	Government	-10 ■

Scenario Results - Occupation

SOC	Occupation	Change in Jobs
11-0000	Management Occupations	-21 
13-0000	Business and Financial Operations Occupations	-12 
15-0000	Computer and Mathematical Occupations	-2 
17-0000	Architecture and Engineering Occupations	-4 
19-0000	Life, Physical, and Social Science Occupations	-1 
21-0000	Community and Social Service Occupations	-1 
23-0000	Legal Occupations	0 
25-0000	Education, Training, and Library Occupations	-4 
27-0000	Arts, Design, Entertainment, Sports, and Media Occupations	-10 
29-0000	Healthcare Practitioners and Technical Occupations	-3 
31-0000	Healthcare Support Occupations	-2 
33-0000	Protective Service Occupations	-2 
35-0000	Food Preparation and Serving Related Occupations	-5 
37-0000	Building and Grounds Cleaning and Maintenance Occupations	-11 
39-0000	Personal Care and Service Occupations	-6 
41-0000	Sales and Related Occupations	-16 
43-0000	Office and Administrative Support Occupations	-35 
45-0000	Farming, Fishing, and Forestry Occupations	0 
47-0000	Construction and Extraction Occupations	-5 
49-0000	Installation, Maintenance, and Repair Occupations	-23 
51-0000	Production Occupations	-121 
53-0000	Transportation and Material Moving Occupations	-50 
55-0000	Military occupations	0 
99-0000	Unclassified Occupation	0 

Scenario Results - Demographics

Demographics	Change in Jobs
Male 14-18	-2 
Female 14-18	-1 
Male 19-21	-8 
Female 19-21	-3 
Male 22-24	-12 
Female 22-24	-4 
Male 25-34	-39 
Female 25-34	-10 
Male 35-44	-52 
Female 35-44	-9 
Male 45-54	-68 
Female 45-54	-36 
Male 55-64	-64 
Female 55-64	-13 
Male 65-99	-10 
Female 65-99	-5 

Appendix A - Data Sources and Calculations

Input-Output Data

The input-output model in this report is EMSI's gravitational flows multi-regional social account matrix model (MR-SAM). It is based on data from the Census Bureau's Current Population Survey and American Community Survey; as well as the Bureau of Economic Analysis' National Income and Product Accounts, Input-Output Make and Use Tables, and Gross State Product data. In addition, several EMSI in-house data sets are used, as well as data from Oak Ridge National Labs on the cost of transportation between counties.

State Data Sources

This report uses state data from the following agencies: Wisconsin Department of Workforce Development, Bureau of Workforce Information

